JOURNAL
OF THE
AMERICAN VETERINARY MEDICAL ASSOCIATION

(*Contents continued on adv. pages 2 and 4*)

Volume 125 OCTOBER 1954 Number 931

Announcing

2 new products for the prevention of hemorrhagic enterotoxemia of calves

WRITE FOR FREE TECHNICAL BULLETIN AND CLIENT LITERATURE.

Clostridium Perfringens Type C Toxoid

A whole culture toxoid recommended for the immunization of pregnant cows and ewes to protect their offspring from hemorrhagic (Type C) enterotoxemia. This toxoid contains a minimum of 30 units per cc. Vaccinate 2 to 4 months before parturition.

Supplied: 50 cc. and 250 cc.

Clostridium Perfringens Type C Antitoxin

A highly potent antitoxin containing a minimum of 1500 units per cc. Derived from the blood of horses hyperimmunized with the Type C toxin of Clostridium perfringens. Recommended for the prevention and treatment of Type C enterotoxemia in cattle and sheep.

Supplied: 100 cc. and 250 cc.

PRODUCED SOLELY BY

Corn States LABORATORIES, INC.

1124 HARNEY ST. • OMAHA 2, NEBRASKA

Try this in your dispensing practice

Giant-size Pensulmycin Syringe (28 cc)

and new display carton . . .

. . . mean more effective mastitis treatment — increased dispensing practice

Each 28 cc syringe contains:

750,000 units Procaine Penicillin G
100 mg. Dihydrostreptomycin
0.75 gm. Sulfathiazole
0.75 gm. Sulfamerazine
5.0 mg. Cobalt Sulfate
with aluminum monostearate in sesame oil base

Pensulmycin in the new Giant Size (28 cc) disposable plastic syringe delivers a massive 28 cc dose for more effective mastitis treatment! Larger volume means therapeutic agents reach isolated pockets of mastitis infection. Each 28 cc disposable syringe contains nearly 4 times the volume of standard tube or syringe.

Combine the more effective Pensulmycin Syringe with the attractive new display carton and watch your dispensing practice grow! 12 individually boxed syringes per carton—each syringe box has direction label under removable formula flap. 12 syringes . . . $7.20.

NORDEN LABORATORIES

LINCOLN Norden® **NEBRASKA**

Journal of the American Veterinary Medical Association

CONTENTS

(*Continued from Cover*)

HIGHLIGHTS OF THE NINETY-FIRST ANNUAL MEETING

SURGERY AND OBSTETRICS

CLINICAL DATA

$10.00 per annum **Foreign $10.50; Canada $10.50** **Single Copies $1.00 Prepaid in U.S.**

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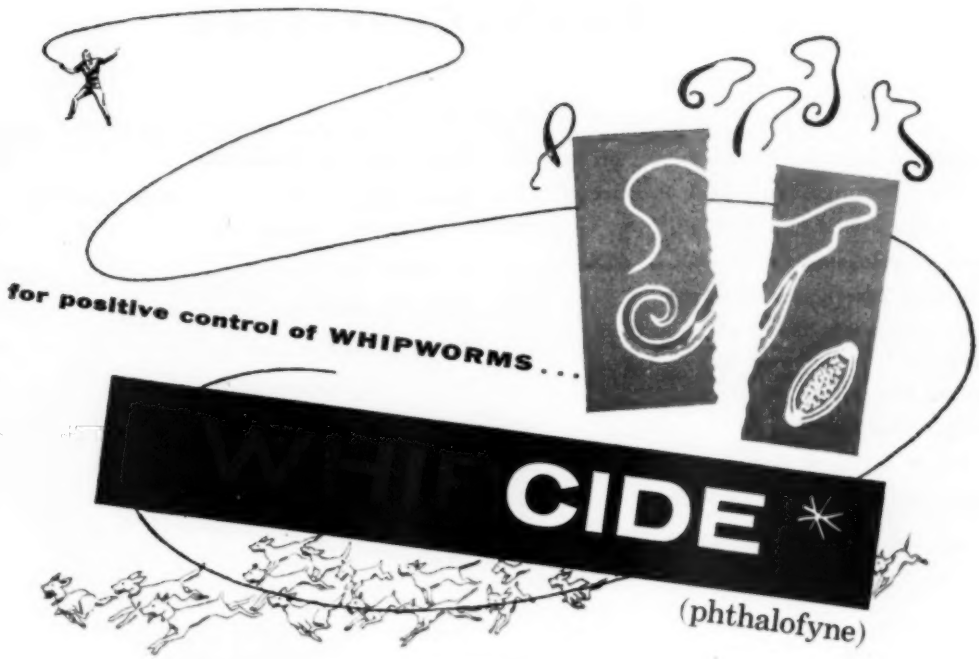


a new Pitman-Moore research discovery

a remarkably effective
SINGLE-DOSE trichuricide

Autopsy studies showed total removal of whipworms from 80 to 88% of infected dogs studied following a SINGLE DOSE of Whipcide. Only a few of the parasites remained in the others.

Clinical reports from practicing veterinarians also indicate that in many cases, based on fecal egg counts, a single dose of Whipcide removed 100% of whipworms.

Whipcide—the most effective trichuricide known to science—is administered orally, 200 mg. of Phthalofyne per Kg. of body weight. It is supplied in three sizes: 0.456 Gm.; 0.912 Gm.; and 2.28 Gm. per tablet. Complete dosage information accompanies each package.

Critical tests, using littermates as controls, have demonstrated the product's safety.

PITMAN-MOORE DIVISION
ALLIED LABORATORIES, INCORPORATED
Indianapolis 6, Indiana

Within this organization originated the policy:
Sales to graduate Veterinarians, only.

* Trade Mark: Patent Pending

CONTENTS—Continued

CLINICAL DATA

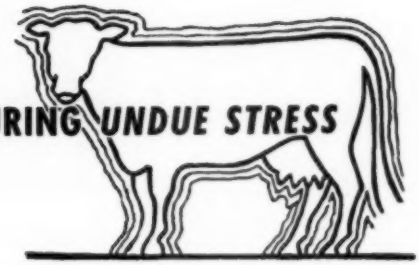
EDITORIAL

CURRENT LITERATURE

THE NEWS

MISCELLANEOUS

FOR STIMULATING ANIMALS DURING *UNDUE STRESS*



dynamone

ARMOUR

Primary ketosis of dairy cows (if glucose therapy is utilized)*
Dehydration
Fever toxemias
Exhaustion or fatigue
Pre- and postoperative support
Management of convalescence
Cachexia

***Dynamone (Armour) cannot be considered as a replacement for Adrenemone in severe cases of primary ketosis.**

2-way therapeutic action

An efficient and economical physiological stimulant, containing 100 U.S.P. units of ACTH in a 50% glucose solution. Dynamone (Armour) provides the animal with a two-fold source of energy (1) REPLACEMENT THERAPY glucose being an immediate available energy source.

(2) STIMULANT THERAPY — ACTH serves as a stimulant for adrenals providing the entire spectrum of gluco-corticoids (compound E-and F-like steroids) which in turn accelerate the conversion of fat and protein to glucose and glycogen.

Dynamone (Armour) maintains the blood sugar concentrations at normal or above normal levels for eight or more hours and is four or more times as effective as glucose alone in maintaining blood sugar levels.

Package information: Dynamone (Armour) is available in cartons containing 6 and 12 x 500 cc. bottles.

ARMOUR **Veterinary Laboratories**
A Division of Armour and Company
520 N. Michigan Ave., Chicago 11, Ill.

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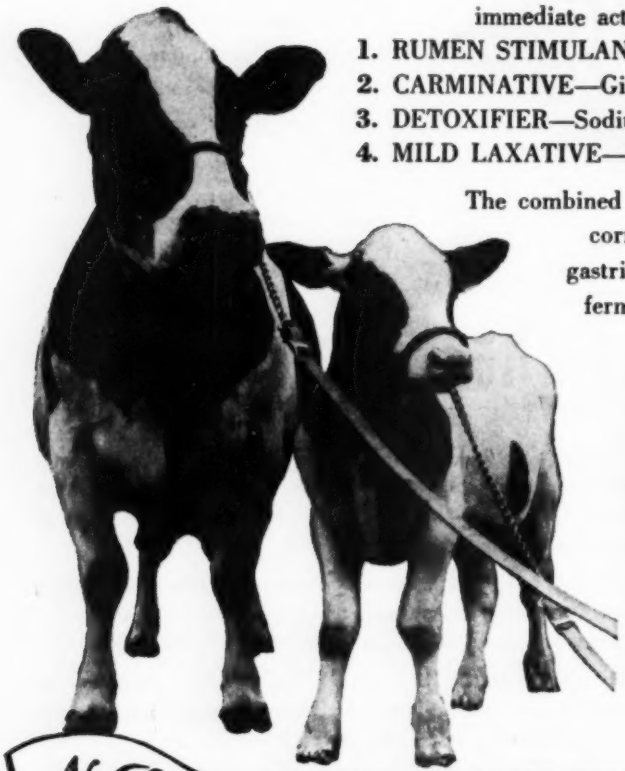
for increased peristalic action

- tartar emetic
- ginger and capsicum
- sodium thiosulfate
- milk of magnesia

rumatone improved is an effective rumenatoric, antacid and anti-ferment combined with the mild laxative action of milk of magnesia. *Rumatone Improved* starts immediate action as a:

1. RUMEN STIMULANT—Tartar Emetic and Nux Vomica
2. CARMINATIVE—Ginger and Capsicum
3. DETOXIFIER—Sodium Thiosulfate
4. MILD LAXATIVE—Milk of Magnesia

The combined action of RUMATONE IMPROVED corrects atony of the rumen, relieves toxic gastritis, and the bloat which comes from fermentation or overloading in ruminants.



directions:

Mix contents of bottle in 1 gallon of water, stir thoroughly and give as drench or with stomach tube. Cattle, one gallon of this mixture, sheep and calves, one pint to one quart of this mixture.

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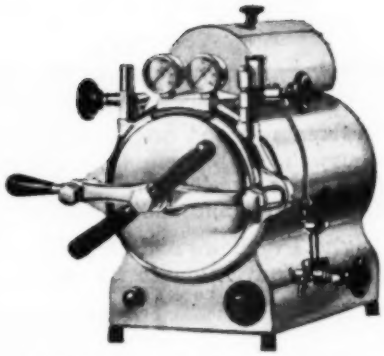
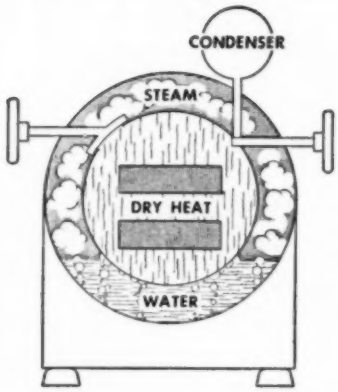


MODEL HP-2 • 8′ x 16′ Chamber



You need DRY HEAT to sterilize instruments that corrode readily

Proper technique in sterilizing **high-carbon steel instruments** which corrode readily, calls for exposure to dry heat at 250° F. for at least four hours, preferably overnight. Instruments should be thoroughly clean before being placed into the sterilizing chamber.

How the Pelton Sterilizes with Dry Heat

To use the Pelton Autoclave as a dry heat sterilizer, you insert the instruments in the inner chamber, lock the door, close both release valves so that steam will remain in the outer chamber and not enter the inner chamber. Turn on the switch for automatic operation overnight. The load will heat to 250° F. and in the morning your instruments will be safely sterilized, dry, and ready for use.

Only Pelton Autoclaves give both pressure steam and dry heat sterilization.

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AVMA ☆ Report

Veterinary Medical Activities

Residents in and around the Seattle area had an opportunity to learn about veterinary medical accomplishments during the AVMA convention, August 23-26, thanks to the excellent coverage afforded through the cooperation of some of Seattle's top TV and radio personalities.

Eight TV shows and 18 radio programs were arranged to bring news about the AVMA convention to the people living in and around Seattle.

A preconvention telecast featured a half-hour interview on Friday, August 20, with Dr. Virginia W. Streets, Lynden, Wash., on women in veterinary medicine, and another featured the film "Valiant Years" on Saturday, August 21.

In addition to the TV and radio programs, the convention was ably covered by reporters from the local newspapers and national wire services.

The AVMA Department of Public Information was impressed with the successful efforts of Dr. F. C. Cummings, Seattle, chairman of the local Publicity Committee, and his members in securing this outstanding coverage of convention activities.

Here is the schedule as it was made up prior to the start of the convention:

MONDAY, AUGUST 23

Station	Time	Subject	Speaker
KOMO	6:30 a.m.	Coccidiosis in Turkeys	Dr. E. N. Moore
KOMO	6:45 a.m.	Enlarged Joint Disease	Dr. J. C. Bankier
KOMO-TV	8:45 a.m.	Advances in Veterinary Science	Dr. C. A. Brandly
KIRO	9:00 a.m.	Safeguarding Our Food Supply	Dr. I. A. Merchant
KOMO	12:00 noon	Bovine Leptospirosis	Dr. H. G. Stoenner
KIRO	Afternoon	Care of Pets	Dr. G. B. Schnelle

TUESDAY, AUGUST 24

KOMO	6:30 a.m.	Vaccination of Chicks Against Newcastle Disease	Dr. C. M. Hamilton
KOMO	6:45 a.m.	Chronic Respiratory Diseases of Poultry	Dr. C. D. Lee
KOMO-TV	8:45 a.m.	Fur Bearing Animals	Dr. J. R. Gorham
KOMO	12:00 noon	Fur Bearing Animals	
KTNT-TV	2:00 p.m.	How Veterinarians Safeguard Food	Dr. C. H. Pals
KING-TV	3:15 p.m.	Women in Veterinary Medicine	Dr. J. Browne

WEDNESDAY, AUGUST 25

KOMO	6:30 a.m.	Relation of Feed to Udder Troubles	Dr. R. C. Klussendorf
KOMO	6:45 a.m.	Bloat	
KOMO-TV	8:45 a.m.	Of Interest to Dairymen	Dr. Harry Hodges
KJR	9:00 a.m.	Animal Fair	Dr. M. L. Morris
KOMO	12:00 noon	Veterinary Research	Dr. A. H. Quin
KXA	Farm & Home Weekly	Progress in Controlling Animal and Poultry Diseases	Dr. C. D. Van Houweling Dr. F. N. Shigley

THURSDAY, AUGUST 26

KOMO	6:30 a.m.	Estrogenic Substances in Ruminant Nutrition	Dr. L. C. Payne
KOMO	6:45 a.m.	Acetonemia	Dr. R. A. Gessert
KOMO-TV	8:45 a.m.	Poultry	Dr. E. E. Jones
KOMO	12:00 noon	Broad Aspects of Nutrition	
KXA	Seattle Speaks	What the Public Doesn't Know About Veterinary Medicine	Gen. J. A. McCallam

SATURDAY, AUGUST 28

The National Farm and Home Hour

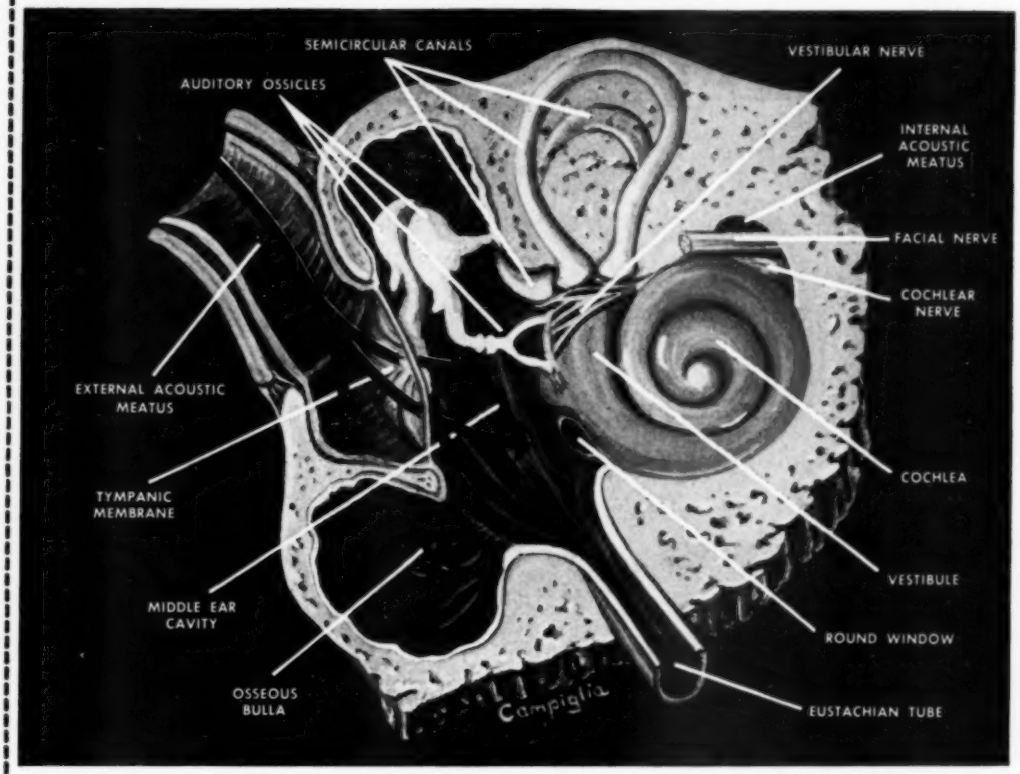
For the sixth consecutive year, the National Broadcasting Corporation again featured the AVMA convention on their Saturday network show.

Bill Moshier, farm director at KOMO in Seattle, conducted a tape-recorded interview on Tuesday, August 24, for rebroadcast on the National Farm and Home Hour on Saturday, August 28. Participating in the seven-minute interview were Dr. A. H. Quin, AVMA president, Dr. M. R. Clarkson, deputy administrator, Agricultural Research Service, U.S.D.A., and Dr. E. C. Stone, dean, College of Veterinary Medicine, Washington State College.

Penetrating
V-TYMPANIDE
W A R R E N - T E E D

MULTIPLE THERAPY FOR OTITIS

CUT OUT HERE . . . KEEP THE DIAGRAM FOR REFERENCE



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safe for cats and all other small animals

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ANOREXIA, INABILITY TO RISE, AND DECREASED MILK PRODUCTION CHARACTERIZE KETOSIS

For ketosis unresponsive to glucose

Cortone®

ACETATE

(CORTISONE ACETATE, MERCK)

Clinical studies have shown that CORTONE is particularly effective in treating both pre- and post-partum ketosis in dairy cattle. A single injection frequently produces remission —with milk production returning to normal in as little as three days even in cases which have proved refractory to parenteral glucose.

OTHER INDICATIONS: Inflammatory eye diseases, extensive burns, allergic dermatoses, and rheumatoid arthritis in dogs, cats, cattle and horses.

SUPPLIED: Saline Suspension of CORTONE Acetate Veterinary: 50 mg./cc., vials of 10 cc.

CORTONE is the registered trade-mark of Merck & Co., Inc., for its brand of cortisone.

It's DINNERTIME

FOR 22,500,000 DOGS!

. . . Yes, there are about 22,500,000 dogs in the United States today. And about 75% of these dogs are fed some kind of commercial dog food.

However, not only does the *amount* of commercial dog food fed each dog vary day by day, but this food often varies in degree of nourishment, palatability and assimilability. In individual brands, these factors may vary even from feeding to feeding.

It seems to us that the question of a better standard of nourishment for America's canine millions should concern dog-food manufacturers as seriously as it does veterinarians.

Here, at Gaines—in our plant, laboratories and research kennels—there is a continuous program of quality control, testing and improvement-research to maintain what we believe to be the highest standards possible in a modern dog food. The result is . . .

Homogenized Gaines Meal

A special Gaines process has combined ingredients of the Gaines formula into appetizing granules. These granules contain uniform amounts of every food element dogs are known to need . . . and are more assimilable, more palatable, far easier to feed! This uniformity is guaranteed in every package, every feeding, every *mouthful!*

Gaines Homogenized Meal is our answer to the need for a higher standard of dog nutrition. It is the answer of many veterinarians whose recommendations have helped make Gaines America's *largest-selling* dog meal.

We hope it is your answer, too!

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HOMOGENIZED DOG MEAL

"Nourishes EVERY INCH of a Dog"

Far out on the moonlit sea ocean-fresh fish caught just for cats are put aboard a Puss 'n Boots ship. For a complimentary full-color 11" x 14" reprint of this original painting by the famous illustrator, John Scott, write on your professional letterhead to Coast Fishers, Dept. M 8, Wilmington, Calif. Please limit request to one picture.

Miles at sea, our ships catch fresh, health-laden fish *just for cats!*

Biological findings indicate that fresh caught *whole fish* is probably the best single food a cat can eat...for two reasons.

NATURAL PURITY

Ocean fresh fish are free from organisms which might harm cats. (Even for human consumption, the purity of fresh deep-sea fish is attested by the fact that the industry requires little government supervision.)

How the Natural Life Balance of WHOLE FISH is retained in Puss 'n Boots

BONE STRUCTURE. Calcium, phosphorus, for sturdy frame. Made crumbly and digestible.

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NATURAL LIFE BALANCE IN WHOLE FISH

Puss 'n Boots processes the *whole fish*—as indicated in the chart—to retain nature's own ideal balance of life giving factors. Palatable cereals are added for all-round nutrition.

YOU CAN RECOMMEND IT WITH CONFIDENCE

Cats which have been improperly fed have shown remarkable improvement when put on a regular diet of Puss 'n Boots. Cat owners may buy it at food stores everywhere.

PUSS'n BOOTS

AMERICA'S LARGEST SELLING CAT FOOD

ADDS THE PLUS IN HEALTH AND BEAUTY

COAST FISHERIES, DIVISION OF THE QUAKER OATS COMPANY, WILMINGTON, CALIF.

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1 your clients know about Terramycin and have confidence in it; **2** because of its effectiveness, when you dispense Terramycin you dispense a product which will justify your clients' faith in you; **3** the professional discount which applies to your purchases of Terramycin offers you a very satisfactory margin of profit.

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½ oz. tube

TERRAMYCIN ANIMAL FORMULA TABLETS
2-tablet "matchbook" folders

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Bactine: Available in 1-gallon, 1-pint and 6-ounce bottles through your regular supplier or we will assist you in ordering.

Now...CONCENTRATED Bactine: Eight times stronger than standard Bactine—saves money and space. Available in 1-pint bottles.

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DISINFECT without RUSTING without DULLING cutting edges!

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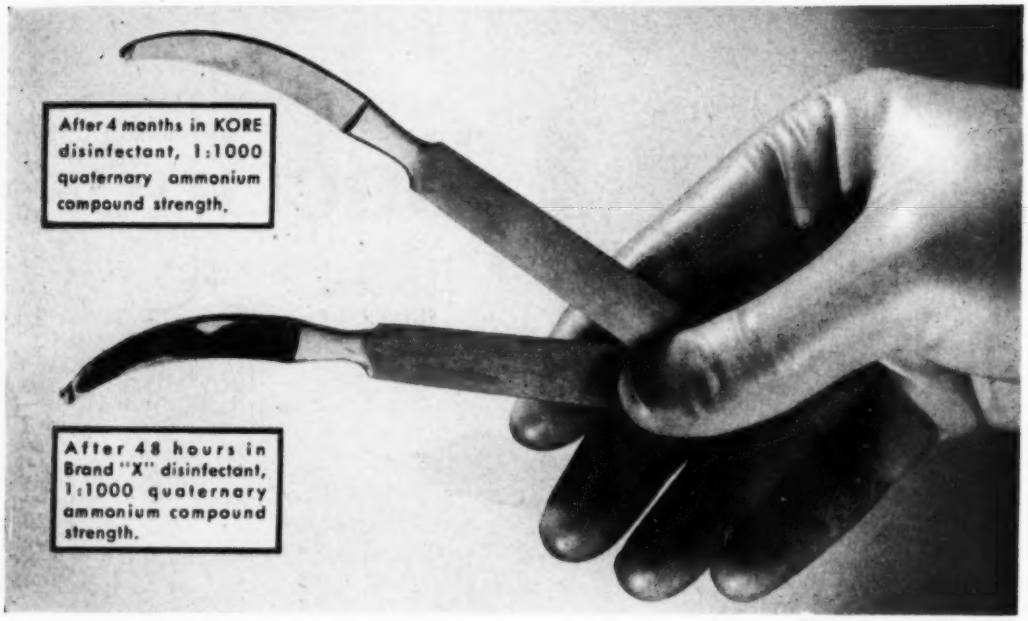

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KORE will not rust or dull cutting edges!

KORE is formulated with a quaternary ammonium compound base* plus synergists which materially speed up killing action against a wide range of pathogenic micro-organisms.

Since KORE is a powder, its use both in the office and in the field is simple. Merely mix 1 tablespoonful in a quart of tap water.

KORE solutions are excellent for sterile storage of syringes and all instruments, including teat and ear instruments.

KORE comes in convenient 11-pound tins, or in 25, 50 and 100-pound drums. It is available from dealers throughout the United States.

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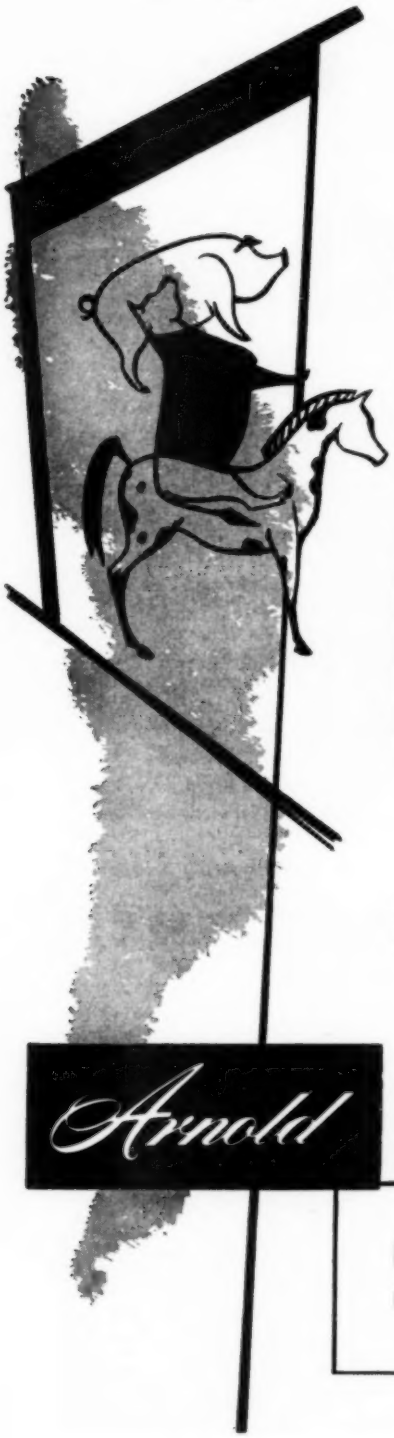

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AROMATIC or TASTELESS?

Arnold now offers your choice of two fine expectorant powders:

* Guiatol Aromatic Expectorant Powder with guiacol aroma: or
* Guiatol Powder, Tasteless — flavored with Oil of Anise.

Both Arnold powders contain Potassium Guaiacol Sulfonate 20%, Ammonium Chloride 50%, Potassium Dichromate, Sodium Chloride and flavoring agent.

For stock solution, just add 1 pound of either Guiatol Powder to 1 gallon of water. A pint of this solution is sufficient for 25 to 50 gallons of drinking water. Arnold Guiatol powders are free-flowing and dissolve readily. Special gummed labels are included for your convenience in dispensing.

	1 Doz.	3 Doz.	6 Doz.	12 Doz.
1 Pound	$22.50	$64.12	$121.50	$225.00
* Unit Cost	1.88	1.78	1.69	1.56

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Clip this coupon, fill in, and mail to Arnold Laboratories for your new Arnold Catalog . . . free of charge.

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LABORATORIES
NEW CASTLE, INDIANA

new antibacterial agent:

for avian salmonelloses: for typhoid, pullorum and paratyphoids of chickens and turkeys

FUROXONE®

brand of furazolidone

Furoxone, one of the antimicrobial nitrofurans, is now available to veterinarians for the treatment of avian salmonelloses caused by Salmonella species including gallinarum, pullorum and typhimurium. Furoxone is administered in the feed at the prophylactic level of 0.0055% (2.5 Gm./100 lbs.) or at the curative level of 0.011% (5 Gm./100 lbs.).

In the study on turkey poults experimentally infected with S. gallinarum, Furoxone reduced the mortality to zero, compared to 85 to 90% mortality among untreated controls.[1]

In chickens experimentally infected with S. gallinarum, Furoxone held deaths to a level of 0 to 3%, as compared to 70% mortality among controls.[2]

In a field study on over 10,000 chickens and 7,000 turkeys with high mortality rates from epizootics of typhoid (S. gallinarum), Furoxone reduced the mortality to approximately 7% and 2% respectively.[3]

Studies to be published reveal comparable effectiveness of Furoxone against S. pullorum in chickens and S. typhimurium in turkeys.

1. Grumbles, L. C., Wills, F. K. and Boney, W.A.: J. Am. Vet. M. A. 124: 217, 1954.
2. Smith, H. W.: Vet. Rec. 66: 215, 1954.
3. Cosgrove, A. S.: Vet. Med. In press.

Furoxone is available as *Furoxone Concentrate Veterinary* containing Furoxone 5.88% (5 Gm./3 oz. excipient) in cartons of 3 oz. and 30 oz.

Literature to Veterinarians on request.

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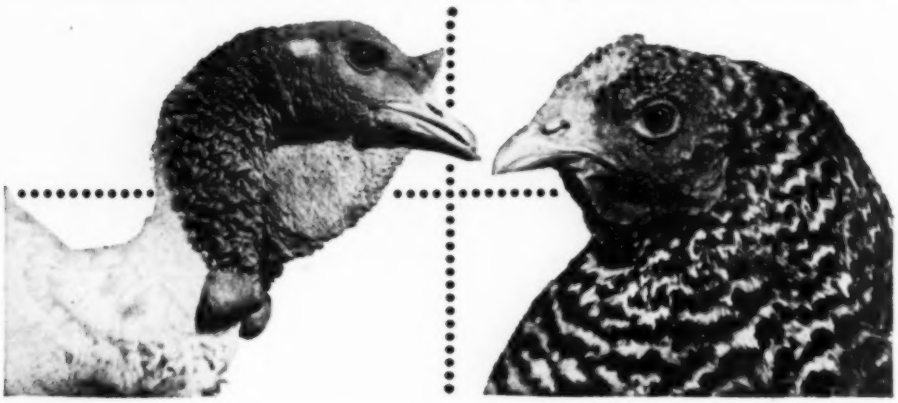
THE NITROFURANS—A UNIQUE CLASS OF ANTIMICROBIALS o,n U.s. PRODUCTS OF EATON RESEARCH



In small animals, new *Filmtab** ERYTHROCIN Stearate gives almost immediate drug absorption . . . plus high, inhibitory blood levels in less than 2 hours. Highly active against gram-positive cocci, including those organisms resistant to other antibiotics. Low in toxicity, *Filmtab* ERYTHROCIN is less likely to produce enterotoxic reactions. Orally effective against pneumonia, bronchitis, certain other respiratory infections, urinary tract infections, certain septicemias, pustular dermatitis, staphylococcic infections and abscesses, enteritis, otitis media and complications of canine distemper. In bottles of 25 and 50, 100 and 200 mg. tablets.

*TM for Abbott's film-sealed tablets, pat. applied for.

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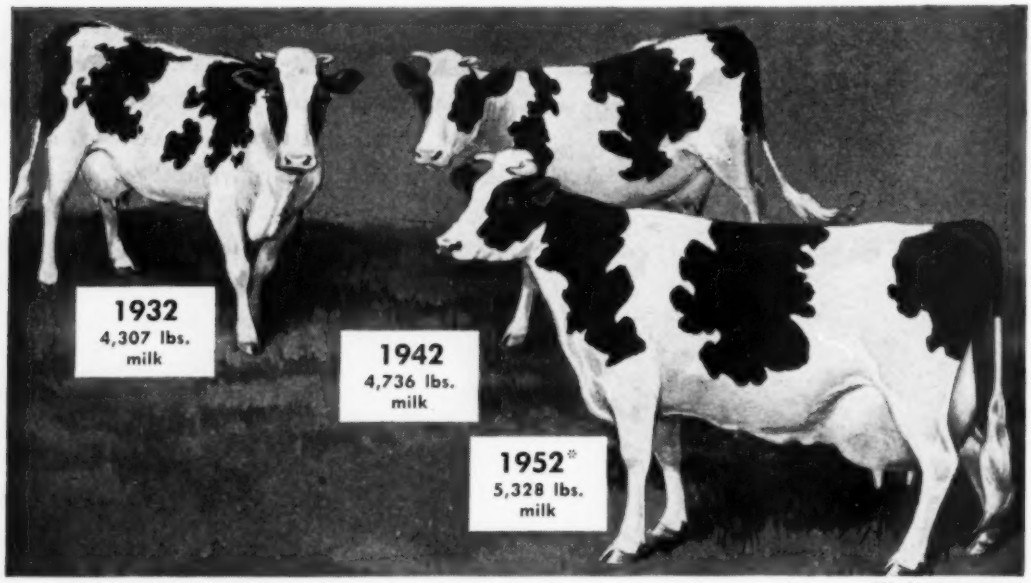

*National averages
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Journal
of the
American Veterinary Medical Association

VOL. 125 OCTOBER, 1954 No. 931

The President's Address

J. A. McCALLAM, Brigadier General, U.S.A. (Ret.)

Washington, D. C.

Fellow members of the American Veterinary Medical Association, members of the Women's Auxiliary, and guests.

For the purpose of the record, your president is complying with that section of the Administrative By-Laws which prescribes that an address be delivered at the regular session on matters pertaining to the advancement of veterinary science. I prefer, however, to consider this a report to the members, in brief form, concerning the principal events and activities of the past thirteen months, including advances, and to mention some of the problems that confront us. Also, some recommendations will be offered.

During a luncheon at the convention in Toronto, I informed the delegates to the House of Representatives, and others present, that I had no specific project to push, such as membership, research funds, or public relations; rather, my efforts would be directed toward working with the other officers for the best interest of the profession and the AVMA on all matters confronting us. We proceeded on that basis. When attending state association and other meetings, a few things were emphasized, however, which it is believed would strengthen and aid the advance of the profession and the AVMA. Among these were: the value of organization within the profession; the importance of unity when a decision is reached at national, state, or local level, advocating the establishment of an official reporting system of communicable diseases and funds therefor; the need for increased research funds; the importance and value of still closer liaison and cooperation between the veterinary profession and the livestock industry and industries allied thereto; and the need for continued education of the public concerning modern veterinary medicine so the importance of an adequate and competent veterinary service to the economy, security, and welfare of the country is fully realized.

President J. A. McCallam

One thing that impressed me at the state association meetings I attended was the great interest shown in the activities of the AVMA — what it has done and is doing as

Delivered at the Ninety-First Annual Meeting of the American Veterinary Medical Association, Seattle, Aug. 23-26, 1954.

spokesman to further the advance of the profession of veterinary medicine in North America. Conversely, it disturbed me somewhat that too many knew little about the internal organization, method of operation, and administration of the AVMA, and did not realize the extent the Association serves the profession through its numerous activities, particularly the expanding public relations program carried on the past several years.

At the risk of being considered presumptious, it is suggested, in view of the fact the constituent associations are considered the core of the AVMA, that the officials of state veterinary medical associations provide for a few minutes on the program, or in the business meeting, for remarks relative to the current AVMA activities, by someone familiar with the subject.

CONSTITUTION AND BY-LAWS

Certain changes in the Constitution and By-Laws, acted on initially and favorably by the Executive Board and House of Representatives last year, received final approval this year. The most important change in the By-Laws is in the succession to the office of president. In the event the president is unable to complete his term in office because of death, resignation, or total disability, the amendment enacted this year provides that the president-elect will become acting president to fill out the unexpired term. Should the president-elect be unable to function as acting president for the reasons cited above, the chairman of the Executive Board will assume office as the acting president for the unexpired term of the president. The succession is logical, and is sound in principle, because each officer is conversant with the current business, administration, and policies of the Association.

U.S.D.A. REORGANIZATION

The Department of Agriculture was reorganized, as were certain other departments in the government, in accordance with a directive from the President of the United States and with the approval of Congress. This reorganization marked the passing of that great and revered Bureau of Animal Industry, along with other bureaus in that Department. Information on the reorganization was carried in several issues of the AVMA JOURNAL, so further discussion is not necessary here. It is mentioned only because three principal questions have been asked me at various state association meetings, also of other officers and staff members. First, was the AVMA aware of the pending change? Second, did it take any action relative to the reorganization as it pertained to the BAI? Third, what effect will the reorganization have on livestock disease prevention and control, and for funds for the research program? Yes, is the answer to questions one and two. In regard to the third, your Board of Governors was told at a conference with the administrator of the Agricultural Research Service, U.S.D.A., that the reorganization is expected to materially strengthen the livestock regulatory program; furthermore, if it did not work out as anticipated necessary changes would be made. With respect to research and funds therefor, the answer was the same, with the added remark that the administrator believed he would be in a better position to advocate adequate funds for livestock disease research.

We must wait on time for the answer as to the effectiveness of the reorganization as it pertains to the veterinary services. The members are assured the AVMA will follow the veterinary activities within the Agricultural Research Service closely—giving our active support to any worthy project that will strengthen and improve the veterinary service to the livestock industry, the industries allied thereto, and in the interest of the public welfare.

LEGISLATIVE AND ALLIED ITEMS

Through the medium of the Washington office and otherwise, the AVMA kept in contact with certain executive branches and agencies in the government, and followed legislation in the Congress, taking appropriate action on items that directly and indirectly concerned the veterinary profession. Representatives of the AVMA appeared before committees of Congress, presenting the viewpoint of the Association on such items as: funds for disease prevention and control, research, meat inspection, and other items in the budget of the U.S.D.A.; tax deferment for the veterinarian; social security coverage; and on legislation affecting the military veterinarian. Concerning the last item, I am happy to report that the Eighty-Third

Congress passed legislation that provides for the grade of first lieutenant for veterinarians, instead of second, on initial appointment in the Army and Air Force. That success was attained—rest assured it was no easy task—is due entirely to the efforts of the AVMA through its members in obtaining and organizing active support for the legislation. It is a significant example of what organization and unity will accomplish.

Research

The present administration is on record as recognizing the need for additional research in various fields, and advocating funds therefor. The Eighty-Third Congress has been sympathetic in this respect, and has appropriated millions for research in various fields of medicine and for dental research. We believe this is as it should be. Is it not time, however, to bring to the attention of the Congress the need for increased funds for research in animal diseases to combat the tremendous losses among food-producing animals? Also, the effect these losses have on the economy of this country and the public welfare.

Perhaps we, representing the organized profession of veterinary medicine, and others interested in reducing these losses are at fault through lack of positive action toward a solution of the problem. Factual information should be collected, analyzed, and presented to the Congress with recommendations for increased research grants earmarked for the study of specific diseases and on a priority basis.

Public Relations

The Association has continued to further the public relations program at national, state, and local level. The demand on the central office by newspapers, radio stations, state veterinary associations, and other mediums for material is evidence not only of public interest in the veterinary profession but an increased realization of the role of the veterinarian and the contributions of the profession to the economy and stability of the United States, and to the public health. The initiation of the program in 1938, and its subsequent development is one of the most forward steps ever undertaken by the Association. It has contributed much to the advancement of the profession and to the knowledge of the public. In my opinion, its continued expansion, within reasonable limits, is warranted and is to be encouraged.

It is gratifying to note the number of state veterinary associations, working with the AVMA, that are developing or expanding their public relations programs. In several of the states, notably Illinois and Minnesota, the women's auxiliaries have assisted in operation of the program. Congratulations to those auxiliaries for their valuable contribution.

Ethics

It was encouraging at the various state meetings attended to note the interest and, in some instances, the concern regarding the subject of ethics. That problems do exist in some areas is putting it mildly. Without discussing the subject and problems, I can say that all with whom I talked agree that instruction in ethics is essential for all veterinary students. It does give the student a foundation on which to build, points out the pitfalls, informs him of his obligations to his fellow veterinarians, his profession and, quite important, to the public.

Miscellaneous Items

Somewhat over a year ago, the Executive Board approved the idea of annual giving to augment the AVMA Research Fund rather than conduct a one-time campaign when the fund was nearing depletion. The subject is mentioned only as a reminder to all concerned that next year we go on an annual giving basis, and to thank constituent associations, individual members, and commercial firms who contributed during the past year.

We are happy to report the Association has reached an all-time high in membership of 13,111. Deducting all losses, the net gain for the year was 628. This is most reassuring. It confirms the belief of many that veterinarians more and more, particularly the younger men, realize the value of organization and that a strong national association is necessary to further the interest in, and continue the advance of, the profession.

Although operational costs have increased, certain activities expanded, and new projects been initiated, you will be glad

to know, as I am pleased to report, the financial status of the Association is satisfactory. For the third successive year the Association has operated without a deficit; in fact a small surplus was available to begin the new fiscal year.

It was my privilege to meet with several student chapters during the year. Usually, this was accomplished when attending a state association or other meeting in the vicinity. The assistant executive secretary, Dr. Kingman, also visited several chapters. The work of these chapters, their interest in the profession and the AVMA, impressed me greatly and was most stimulating. They deserve our continued hearty support.

PAN AMERICAN VETERINARY CONGRESS

Your president attended the Second Pan American Congress of Veterinary Medicine held in Sao Paulo, Brazil, April 3-10, 1954, as the delegate from the AVMA. The purpose of the Congress was to study the present aspects of veterinary medicine related to animal production, animal hygiene, hygiene and food technology, teaching, and professional subjects.

There were plenary sessions and section meetings. It was a most successful congress. The veterinarians in South America have the same ideals, the same aspirations, and the same objectives as we—that is to advance the science and art of veterinary medicine for the good of the economy and stability of their respective countries and the public welfare, and the betterment of the profession of veterinary medicine.

It is the wish of the Pan American Veterinary Congress that the Third Congress be held in the United States in 1959.

PROBLEMS UNDER STUDY

One item of concern and vital importance to this Association is the subject pertaining to veterinary medical supply problems, both within and without the profession. The subject matter, which has many ramifications, has received consideration by the Executive Board, and a special committee was appointed in January to consider, survey, and evaluate the many elements relating to the effect of sales, dispensing, and merchandising of veterinary biological and pharmaceutical products and supplies. Also, in connection with this problem, cognizance has been taken of the active campaign conducted by some druggists, and at least one state pharmaceutical association, to encourage and advocate the development or expansion of an animal health department in drugstores. In March, the Virginia Pharmaceutical Association, assisted by the American Animal Health Pharmaceutical Association and the Animal Health Institute in arranging the program, conducted a two-day animal health seminar for pharmacists. An announcement stated: "The purpose of the seminar is, briefly, to provide information concerning the great potential in this field for the retail druggist and to encourage him, through scientific and merchandizing instruction, to develop an Animal Health Department in his own store." Also, an editorial comment in the *Virginia Pharmacist* (March, 1954) entitled: "Service at a Profit," referring to the seminar, included the statement: "The program has been designed (1) to portray the potential for service to his community and for profit of the retail pharmacist; (2) to teach the fundamentals of animal health pharmacy; and (3) to demonstrate how the retail pharmacist can establish himself in this field."

Perhaps the stated purpose of the program and the editorial comment may appear innocuous. Certain information received would indicate otherwise. Although cooperation between the druggist and veterinarian was emphasized by a number of speakers, statements attributed to some indicate, in my opinion, the purpose of the seminar was to advise the pharmacist how he could provide information to the farmer and pet owner on animal diseases, including indications for and the administration of medicines, antibiotics, biological products, etc., thereby promoting direct over-the-counter sales.

For your information, this development among pharmacists is also receiving the attention of the American Pharmaceutical Association with whom the AVMA central office has been in correspondence and has had at least one conference on the subject. This matter has been referred to the Committee on Veterinary Supply Problems.

RECOMMENDATIONS

It is recommended that:

1) Appropriate action be taken toward effecting the establishment of an official and adequate reporting system of commu-

nicable diseases of animals in the United States.

2) Appropriate action be initiated toward obtaining increased grants from the Congress of the United States for research in diseases of animals.

3) Continued effort be made to effect the transfer of the inspection of poultry from the Agricultural Marketing Service to the Meat Inspection Branch, Agricultural Research Service, United States Department of Agriculture.

CONCLUSION

From comments expressed, the enthusiasm and interest noted, and from official reports, I am happy to say the Association is concluding a successful year. This has been due to the support of the members and your belief that the work the AVMA does is essential to the continued advance of the profession.

I express my gratitude to the other officers, the members of the Executive Board, the committee chairmen, and members for your untiring efforts in discharging your responsibilities and for your devotion in working for the best interest of the AVMA and for all segments of the profession. To the Women's Auxiliary to the AVMA, our thanks for your good help and cooperation. To our exceedingly capable and loyal executive secretary, to his staff assistants, and to the other members of the central office, my sincere appreciation for your assistance and cooperation. Yours has been a job well done.

It has been a pleasure and privilege to serve as your president. I thank you for the great honor bestowed on me.

Mrs. Russell A. Runnells delivering greetings of the Women's Auxiliary to the convention at the Opening Session of the Ninety-First Annual Meeting of the AVMA.

President McCallam Delivering His Address at the Opening Session of the Ninety-First Annual Meeting of the AVMA in Seattle, August 23, 1954

Highlights of the Ninety-First Annual Meeting Seattle, August 23-26, 1954

The President-Elect

Dr. Floyd Cross, dean of the School of Veterinary Medicine, Colorado A. & M. College, Fort Collins, is the new president-elect of the AVMA. He succeeds Dr. A. H. Quin who was installed as president at the Closing Session of the Ninety-First Annual Meeting in Seattle, August 26.

Dr. Floyd Cross

Dr. Cross was born Aug. 10, 1891, in Berthoud, Colo., attended high school at Pueblo and Fort Collins, and graduated from the School of Veterinary Medicine of the Colorado A. & M. College in 1914. As a youth he excelled in track and football, being captain of the team and an all-conference half-back his senior year in college. After joining the faculty, he served as coach of the freshman football team for about twenty years. He was appointed to the faculty of his alma mater in 1915 and, except for two and one-half years leave of absence for army service, has been there continuously since that time.

In addition to his regular teaching schedule, Dr. Cross served as head of the Department of Veterinary Medicine from 1934 to 1936, as dean of men for the entire college from 1936 to 1942, and as head of the Department of Veterinary Pathology and Bacteriology from 1942 until he became the dean of the School of Veterinary Medicine in 1947.

His military experience included service on the Mexican Border and in World War I as an artillery officer. Shortly after arriving in France in January, 1918, he was transferred to the new Veterinary Corps as a first lieutenant. During World War II, he served as chairman of the Committee on Procurement of Veterinarians for Colorado and as chairman of his county draft board. Also during World War II, he assumed the additional responsibilities of extension veterinarian for Colorado, an experience which brought him into closer contact with the state's livestock breeders. The confidence he engendered among the latter resulted, in 1953, in the Colorado Cattleman's Association establishing the "Floyd Cross Foundation" to which the cattlemen are contributing, for at least five years, $50,000 and 100 cattle annually to be used for cattle disease research.

Dr. Cross has long been recognized as an authority on the diseases of sheep, having been the author or co-author of at least 75 articles on the subject. His long and intimate contact with sheep breeders resulted in the Colorado Wool Growers' Association also volunteering substantial funds for research in sheep diseases under his direction. The meat-packing industry of Denver is also providing substantial funds for disease research under Dr. Cross's supervision.

Serving as the only veterinarian on the Western Interstate (11 states) Commission for Higher Education, Dr. Cross was instrumental in having veterinary medicine included with medicine, dentistry, and public health in the student interchange plan.

His association activities include membership in the AVMA since 1920, secretary of the Colorado V.M.A. from 1926 to 1933, and active participation in the Intermountain V.M.A. for many years. He is a past-president of the Fort Collins Rotary Club, an Elk, and a member of Phi Kappa Phi, Alpha Psi, Phi Zeta, and the social fraternity Phi Delta Theta.

In 1919, Dr. Cross was married to Edith Culver. They have one daughter and two granddaughters. With little time for hobbies, he enjoys relaxing with his family, managing his farm, and horseback riding.

Vice-Presidents Elected at Seattle

The vice-presidents of the AVMA were elected on a new basis at the AVMA annual meeting in Seattle Aug. 23-26, 1954, one being elected from each of the four zones and one at large.

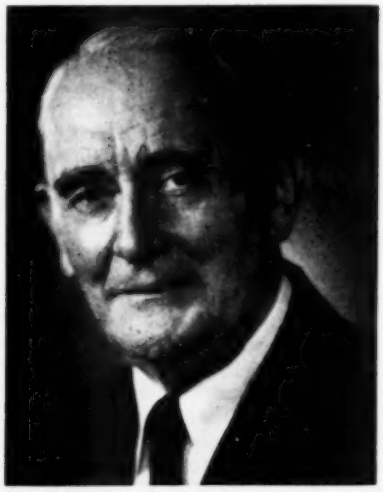
Unanimously elected were Drs. Robert H. Wright, Dundas, Ont., Zone 1; M. G. Fincher, Ithaca, N.Y., Zone 2; McKenzie Heath, Auburn, Ala., Zone 3; T. Robert Phelps, Vancouver, Wash., Zone 4; and Frank B. Young, Waukee, Iowa, at large. Another innovation is that the treasurer was, and henceforth will be, appointed by the Executive Board. Dr. H. E. Kingman, Jr., Chicago, was appointed to the office, at Seattle, for the ensuing year.

Retiring President Brig. Gen. J. A. McCallam receiving the service scroll, for a year of work well done, from Acting Chairman of the Board Dr. W. R. Krill.

Incoming President A. H. Quin receives gold key from Dr. W. R. Krill, acting chairman of the Executive Board.

Incoming President A. H. Quin is installed by Retiring President Brig. Gen. J. A. McCallam at the Closing Session of the Ninety-First Annual Meeting of the AVMA in Seattle, Aug. 23-26, 1954.

Retiring President Brig. Gen. J. A. McCallam congratulates President-Elect Floyd Cross at the Closing Session of the Ninety-First Annual Meeting of the AVMA in Seattle.



Dr. F. W. Schofield, Guelph, Ont., was awarded the Twelfth International Veterinary Congress Prize at the Seattle meeting for outstanding service to veterinary science and the veterinary profession.

Dr. H. J. Miller, Eaton, Colo., received the AVMA Award, at the AVMA annual meeting in Seattle, for meritorious service to the membership and the veterinary profession.

Fourth Preconvention Conference

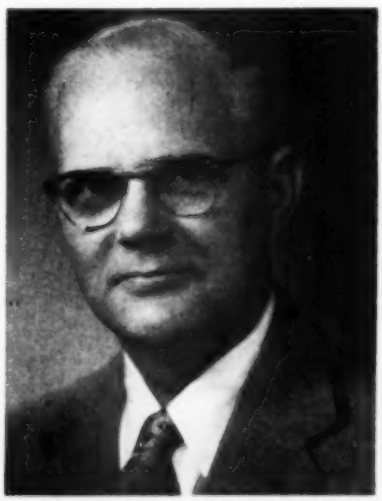
The preconvention conference, held on August 22 preceding the Ninety-First Annual Meeting of the AVMA in Seattle, was based on the theme of "Building Appreciation of Public Relations and Ethics." More than 100 attended. The program was in charge of Drs. B. S. Pomeroy, chairman, and D. F. Eveleth, secretary, the secretaries of the Minnesota and North Dakota associations, respectively.

During the morning, veterinarians from eight states participated in the discussions on "The Public Relations and Ethical Aspects of Prescribing, Dispensing, and Merchandizing Veterinary Products." They emphasized the variation in economic factors, such as livestock values and concentrations, and their effect on practice methods. Because of the difficulty in developing a uniform code of ethics which would be practical in all areas, it was suggested that most ethical problems might best be handled at the state association level, since the AVMA committee would not be entirely conversant with the problem and the local committees would be too apt to be involved.

At the luncheon session, Mr. Albert Mitchell of the Tequesquite Ranch, Albert, N.M. (whose picture appeared on the cover of a recent issue of *Country Gentleman*), gave an interesting historical sketch of disease problems as they have affected ranching. He stressed the need for more uniform interstate disease-control regulations.

At the afternoon session, which was devoted to "Implementing a National Public Relations Program Through State and Local Veterinary Groups," the part played by the Women's Auxiliary was discussed by Mrs. U. E. Marney, San Antonio, Texas; Mrs. L. J. Miller, Lincoln, Ill.; and Mrs. B. S. Pomeroy, St. Paul, Minn. The Women's Auxiliary to the Illinois Veterinary Medical Association promoted the use of AVMA radio scripts by 11 stations, and the Minnesota auxiliary succeeded in having the scripts broadcast over 13 stations.

Dr. N. J. Miller told how the Weld County (Colo.) Veterinary Association has functioned continuously since 1919 and how its members cooperated in vaccinating about 90 per cent of the county's dogs during a rabies epizootic in 1952 and how they have established uniform methods



Dr. M. G. Fincher, Ithaca, N.Y., received the Borden Award at the Seattle meeting for outstanding research contributing to disease control in dairy cattle.

for doing most of the artificial insemination of cattle in the county.

Dr. F. J. Kingma, Columbus, Ohio, then discussed the benefits of a professional assistant to the secretary of a state association.

Excerpts from Reports of the AVMA Staff

Executive Secretary J. G. Hardenbergh reported a net gain in membership of 628 for the past year. Of the 924 applicants, 811 were students applying for membership upon graduation, and 113 were "regular" applicants. Dr. Hardenbergh also pointed out that in 1905 there were 603 AVMA members and in 1954 there are 13,111 members.

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In the report of Assistant Executive Secretary H. E. Kingman, the activities of the AVMA during the year were reviewed, including the meeting of Executive Board District II in Ocean City, Md.; the Southern Regional Education Board's proposal to develop measures to meet future needs for veterinary service; developments in the AVMA film library activities; and student chapter, committee, and interassociation work.

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Of special interest to the House of Representatives was a report on legislative activities, given by General McCallam, AVMA representative in Washington, D.C. General McCallam will continue to serve in this capacity.

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R. R. Rongren, director of membership services, reported that: 46 radio stations in 30 states made application during the past year to use proposed new series of electrical transcriptions; provision was made in this year's budget for the development of TV material; an index of 173 radio scripts was sent to all constituent association secretaries and chairmen of public relations committees; a speakers' bureau was organized listing 484 names of speakers; and a news letter containing ideas and advice on public relations and member relations for state and local veterinary medical associations will be issued monthly or bimonthly in 1955.

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Dr. W. A. Aitken, editor-in-chief, reported that

Receiving line at the President's Reception and Dance in the Civic Auditorium the evening of August 25, during the AVMA convention in Seattle.

during 1953 approximately 200 manuscripts and case reports were published in the JOURNAL of the AVMA. The time lag between receipt of manuscripts and publication in the JOURNAL is usually shortest in the late spring.

The 632 pages of the *American Journal of Veterinary Research* during 1953 is an increase of 7 per cent over 1952, and more than double the ten-year average from 1941 to 1950, inclusive.

• • •

The assistant editor, Helen S. Bayless, reported that the "Proceedings Book" has increased in size each year since the first one was published. The first (1950) contained 462 pages and the latest (1953) issue contained 618 pages. The 1954 Proceedings Book will be Smyth-sewn. This will provide a firmer binding and eliminate the problem of loose pages which occurred in the last two issues due to poor binding.

The circulation of the JOURNAL as of June 30, 1954, was 16,761; of the *American Journal of Veterinary Research*, 3,166; and 11,482 copies of the 1953 Proceedings Book were mailed to members.

• • •

Treasurer H. E. Kingman reported that assets increased $28,757.27 the fiscal year ending June 30, 1954. This increase is the result of an excess of receipts over expenditures in AVMA activities of $29,405.69, offset slightly by the fact that the Research Fund expenditures exceeded receipts by $1,574.69 during the past fiscal year.

Winner of Humane Act Award

Alan Campbell, a 16-year old student of East Corinth, Maine, won the 1954 AVMA Humane Act Award and a $100 U. S. Savings Bond for his single-handed campaign against the practice of chaining cows at calving time.

The youth became concerned over the spectacle of newborn calves, injured or dying of neglect, out of reach of the tethered cow. Alan advocates maternity pens in which cows are confined but not chained prior to calving. A farm-to-farm canvas in his home area showed that less than one fourth of the dairy farmers use such pens. So Alan set out to correct matters. He made "The Curse of the Chain" his subject for an F.F.A. speaking contest, and won state and regional honors.

He delivered his speech widely throughout Maine, and dairy farmers were urged to put his advice to practical and profitable use.

In addition to the top award, certificates of merit were presented to ten other boys and girls whose efforts on behalf of kindness to animals during the year are deserving of prominent recognition.

Alan Campbell, East Corinth, Maine, winner of the 1954 AVMA Humane Act Award at the Seattle Convention

Nerve and Arterial Blood Supply to the Horns of the Goat with Reference to the Sites of Anesthesia for Dehorning

ARTURS VITUMS, Dr. Med. Vet.
Pullman, Washington

IN PERFORMING the dehorning operation in the goat, the blockage of the cornual nerve, a routine procedure in the ox, does not result in a complete desensitization of the area involved. In order to explain this insufficiency, the nerve supply to the horns of the goat was examined. Also, because of its surgical significance, the arterial blood supply to the horns was traced.

The standard textbooks of veterinary anatomy, as well as the available literature, are lacking in a description of the nerve and blood supply to the horns of the goat.

Six fresh and 2 embalmed specimens (mainly Saanen and Toggenburg breeds), including both sexes and different ages, were examined. In order to facilitate the tracing of the arterial blood supply to the horns, the arteries were injected with latex. A routine dissection of these specimens was carried out to determine the nerve and blood supply to the horns. The findings of these dissections are discussed below, and sites for producing nerve block anesthesia are suggested.

THE NERVE SUPPLY

The nerve supply to the horns of the goat is provided by the cornual branches of the lacrimal and infratrochlear nerves.

The cornual branch of the lacrimal nerve (fig. 1 [1]) emerges from the orbit behind the root of the supra-orbital process. The nerve, covered by the thin frontal muscle, crosses the superficial temporal artery on its deep surface and divides into several branches. Two of these, accompanied by the ventral cornual artery, course toward the caudolateral aspect of the base of the horn and supply mainly the lateral and the caudal part of the horn.

The infratrochlear nerve, before emerging from the orbit, gives off branches to the structures of the medial canthus of the eye. The main trunk of the infratrochlear nerve emerges from the orbit at its dorsomedial margin and divides into two branches, the dorsal or cornual branch and the medial or frontal branch.

The cornual branch of the infratrochlear nerve (fig. 1 [2]) is larger than the frontal branch. After a short course dorsad, the cornual branch bifurcates. One of its branches runs toward the dorsal aspect of the base of the horn and ramifies mainly in the dorsal and dorsomedial parts of the horn. The other one courses toward the medial aspect of the base of the horn and gives off branches to the medial and caudomedial parts of the horn. Both branches of the cornual nerve in their course to the horn are covered in part by the orbicularis oculi and in part by the frontal muscles. The branches of the nerve cross the superficial temporal artery which is located deep to them.

The smaller medial or frontal branch (fig. 1 [3]) courses toward the midline of the head and ramifies in the skin of the frontal region. It does not contribute to the innervation of the horn.

THE ARTERIAL BLOOD SUPPLY

The horns of the goat are supplied by the branches of the superficial temporal artery (fig. 1, a). It ascends toward the base of the horn but before reaching the latter, the artery curves over the lateral edge of the frontal bone and continues toward the midline of the head. It then runs rostrad and gradually fades out in the dorsum of the nose.

Dr. Vitums is associate professor, Department of Anatomy, College of Veterinary Medicine, State College of Washington, Pullman.

Two large cornual arteries are given off from the superficial temporal artery at the lateral aspect of the base of the horn. They are the ventral and the dorsal cornual arteries. The ventral cornual artery (fig. 1, b) courses around the caudolateral aspect of the horn. The dorsal cornual artery (fig. 1, c) ascends toward the dorsomedial surface of the base of the horn and anastomoses with the ventral cornual artery at the caudomedial aspect of the horn. Many smaller branches are given off from both cornual arteries and ramify in the corium of the horn.

THE SITES FOR ANESTHESIA IN DEHORNING

In order to obtain a complete desensitization in the dehorning of the goat, the cornual branches of the lacrimal and infratrochlear nerves should be blocked. The site for producing anesthesia of the cornual branch of the lacrimal nerve is behind the root of the supra-orbital process (fig. 1, area encircled by continuous line). The needle should be inserted as close as possible to the caudal ridge of the root of the supra-orbital process to a depth of 1.0 to 1.5 cm., depending on the animal.

The site for producing anesthesia of the cornual branch of the infratrochlear nerve is at the dorsomedial margin of the orbit (fig. 1, area encircled by interrupted line). The nerve is palpable in some of the larger living animals at the serrate margin of the dorsomedial part of the orbit by applying a slight pressure and by moving the skin over this area.

The needle (we used 22-gauge needles) should be inserted as close as possible to the margin of the orbit to a depth of approximately 0.5 cm. The use of 2 cc. of 2 per cent procaine solution injected at each

Fig. 1—Nerves and arteries of the right horn of a goat: (1) cornual branch of lacrimal nerve; (2) cornual branch of infratrochlear nerve; (3) frontal branch of infratrochlear nerve; (a) superficial temporal artery; (b) ventral cornual artery; (c) dorsal cornual artery. The encircled areas indicate the sites for anesthesia in dehorning.

of the sites described, in several goats, has given satisfactory results.

SUMMARY

The horns of the goat are supplied by the cornual branches of the lacrimal and infratrochlear nerves. The arterial blood supply to the horns is essentially derived from the superficial temporal artery. Two major branches, the ventral and the dorsal cornual arteries, are described.

In order to obtain complete anesthesia in the dehorning of goats, the cornual branches of the lacrimal and infratrochlear nerves should be blocked. The points of the anesthesia are described and illustrated.

Vasectomy of Turkeys

G. E. WHITMORE, D.V.M., and M. W. OLSEN, Ph.D.

Beltsville, Maryland

A group of vasectomized turkeys was desired in order to study the effect of coitus upon parthogenic development of turkey eggs. It had been found[1] that a larger number of eggs showed growth of extra-embryonic membranes when virgin hen turkeys were in sight and sound of toms than when they were entirely isolated. It was reasoned from this observation that more parthogenesis might occur if virgin hens were allowed to copulate with vasectomized toms.

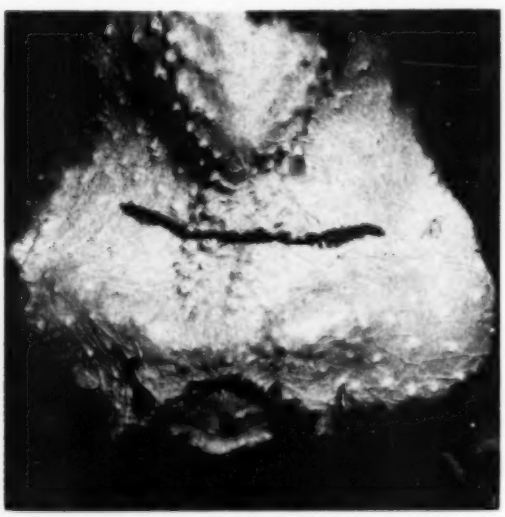


Fig. 1—View of location and approximate length of incision for vasectomy operation on male turkey.

For this purpose 6, 26-week-old Broad Breasted Bronze male turkeys were deprived of food for twenty-four hours prior to surgery. Anesthesia was induced by the injection into the wing vein of a commercial pentobarbital sodium solution, 1 gr. per cubic centimeter concentration. The amount of solution was given on a weight basis, 1 cc./5 lb. of body weight. No untoward effects were observed from the anesthesia and recovery was rapid and uneventful.

Immediately after narcosis developed, the ventral portion of the body, between the posterior end of the sternum and the cloaca, was plucked free of feathers. A transverse incision, about 4 inches in length, was made approximately half way between the posterior end of the sternum and the anus (fig. 1). By the use of retractors and the help of an assistant, the viscera were held to one side of the body cavity to facilitate the location and removal of the vasa deferentia. The tubules appeared as straight, smooth structures approximately 0.5 mm. in diameter and were located adjacent and lateral to the ureters, except in 1 large bird in which they were convoluted and slightly larger. By blunt dissection, the overlying peritoneal and interconnective tissues were separated and each vas deferens was disengaged from its attachment near the ureter. When freed, each was grasped with fingers and forceps and by traction a section approximately 4 cm. long was removed. The incision was closed with a continuous No. 8 cotton suture.

An examination for sperm has been made at weekly intervals beginning at the end of the second postoperative week and as yet none have been found. Four weeks after surgery, the toms exhibited no loss of sexual activity or change in their secondary sex characteristics. To date, over 2,500 eggs laid by hens cohabiting with these vasectomized toms have been incubated and examination has revealed no fertile eggs.

From the Animal and Poultry Husbandry Research Branch, Agricultural Research Center, Beltsville, Md.

[1]Olsen, M. W., and Marsden, S. J.: Development of Unfertilized Turkey Eggs. Exper. Zool. In press.

A Bovine Gestation Period of 371 Days.—A 2-year-old Shorthorn heifer, bred Dec. 24, 1952, calved Jan. 1, 1954. The heifer calf, being too large for normal birth, was delivered by cesarotomy through the left flank. Although alive three days earlier, it was dead at delivery. References are cited to other bovine gestation periods of 404 and 439 days.—*Vet. Rec., July 10, 1954.*

An Unusual Vaginal Infection in Cattle

G. A. JONES, D.V.M.

Sedro-Woolley, Washington

The rareness of the following condition prompts me to describe briefly an infectious disease in cattle that I have observed probably six or seven times in my forty-three years of practice. Only recently has any enlightening information been offered on those cases. Attention is called to these animals one to three days following parturition by their constant straining, anorexia, and agalactia. Vaginal examination reveals a white coating, on the mucous membrane, of a cheesey consistency which can be scraped off, leaving a bleeding surface. This condition rapidly extends to cover the entire vagina, cervix, and gradually the uterus.

All cases have ended fatally, except the last one which responded rapidly to 1 Gm. of intravenous terramycin®, with recovery in a short time.

A scraping from the vagina was sent to F. W. Crews, bacteriologist, Division of Dairy and Livestock, Olympia, Wash., who recently submitted the following report:

> Results of determinative bacteriological work showed three types of microorganisms present: (1) coliform bacteria (this group would be anticipated in a specimen of the vaginal region); (2) *Corynebacterium pyogenes* (most specimens from an infected cow show organisms of the genus Corynebacterium); and (3) *Spherophorus necrophorus* (cultures of this organism are not readily identified and require considerable study; they grow best under reduced oxygen and often require partial anaerobic conditions).
>
> The Spherophorus organism has been encountered here in specimens only once previously. You will find this organism discussed in recent texts. "Veterinary Bacteriology" by I. A. Merchant carries an excellent discussion of this organism. It used to be placed with Actinomyces and earlier it was considered *Fusiformis necrophorus*. Calf diphtheria also has been attributed to *Spherophorus necrophorus*.

Dr. Jones is a general practitioner in Sedro-Woolley, Wash.

Transplantation of Sheep's Ova.—Photographs of twin lambs with different mothers are shown in the *Veterinary Record*, July 10, 1954. When one ovum was transplanted from a ewe of a small breed to one of the large breeds, the lamb was 2½ lb. heavier at birth than its twin born to the real mother.

Factors in Wound Dehiscence

Dehiscence is defined as "a wound separation including the peritoneum." In a study of 500 laparotomies excluding hernias and appendectomies, at each of two hospitals, dehiscence occurred in 5.8 per cent at one hospital and in 1.6 per cent at the other, mostly in complicated cases. The predisposing factors were: nutritional deficiency incident to carcinoma, infection, or debility; mechanical factors such as violent coughing and abdominal distention; the type of wound closure—layer closure plus through-and-through retention sutures having the best record; and age. Dehiscence was more common in older patients (average 56 years).—*J.Am.M.A., July 31, 1954.*

Colotomy for Obstipation in a Dog

An aged dog which had passed no feces in three weeks had developed a prolapsed rectum. The colon was distended by an extremely hard mass. After intravenous nembutal® anesthesia, a medial incision was made from the xiphoid cartilage to the prepuce, the descending colon was exteriorized and incised. The fecal mass, which was in three segments, was removed by forceps and manipulation. During the operation, 100 ml. of canine serum was given by intravenous drip, and for the next two days 100 ml. per day of normal saline solution was given subcutaneously. Fluids were given by mouth on the third day and food on the fourth. Penicillin was applied topically during the operation and given with streptomycin intramuscularly for three days. The animal made an uneventful recovery.—*Austral. Vet. J., May, 1954.*

Incidence of Bovine Metritis.—One survey of cows which required repeated breeding indicated that 75 per cent had uterine infection without showing outward symptoms. Another study indicated that 80 per cent of the cows in certain herds conceived at the first service but pregnancy was maintained in only 50 to 60 per cent; the other embryos perished in twenty to thirty-five days, probably due to a mild metritis.—*Hoard's Dairyman, April 10, 1954.*

CLINICAL DATA

Field Trials of a Bacterin for the Control of Erysipelas in Turkeys

A. C. JERSTAD, B.S., D.V.M., and E. E. JOHNS, M.S.

Puyallup, Washington

DICKINSON *et al.*[1] reported results of artificial challenge of turkeys from field trials in which an experimental *Erysipelothrix rhusiopathiae* bacterin had been used as an immunizing agent. Birds vaccinated intramuscularly with 2.0 ml. of the bacterin at 42 and 56 days of age showed good immunity on the last challenge conducted 113 days later. Thus, it appeared that market birds might be afforded protection if immunized at 6 to 8 weeks of age. Birds vaccinated once at an older age did not withstand challenge as well as birds vaccinated at the earlier age but, when given two injections at varying intervals, immunity seemed to be raised to a degree comparable to that of the younger birds.

This report presents mortality rates due to erysipelas and other causes in three commercial turkey flocks. A third or more of the birds in each flock were vaccinated with the experimental bacterin and subsequently experienced severe exposure to erysipelas in the form of natural outbreaks of the disease. The period covered is the 1952-1953 turkey-growing and -breeding season. The results of artificial challenge of birds from these flocks were included in the aforementioned report.[1] For clarity and necessary comparison with data to be presented, these challenge results are briefly noted in pertinent sections of this paper.

MATERIALS AND METHODS

The Bacterin.—The erysipelas bacterin was the same as that used by Dickinson *et al.*[1]

Field Trials.—The general pattern outlined by Dickinson *et al.* applied. This consisted of banding and vaccinating approximately one third to one half of the birds in each of the three flocks concerned. The bacterin was injected into the muscles of the leg. The vaccinated and unvaccinated birds remained together in the same flock. Thus, at least half of the birds of each flock were susceptible. Fortunately for the experiment, an outbreak occurred in each flock to test the protection conferred by the bacterin under conditions of a natural outbreak. One flock was revaccinated during the course of the outbreak. In a second flock, the unvaccinated birds were treated with penicillin.

Postmortem Examination and Laboratory Procedures.—In flock 1, all birds dying subsequent to vaccination were presented for necropsy. Presentation of the entire bird proved burdensome as the outbreak progressed. Hence, in the other flocks, the owners were instructed to present a fresh or frozen shank with identification bands. The date of death was marked on each shank. Data previously accumulated, in which cultures from the marrow were checked against cultures from the liver of turkeys that had died of erysipelas, gave a close correlation of *Ery. rhusiopathiae* isolations The organism was also readily isolated from frozen tissues of these birds. The shank marrow was streaked on enriched nutrient agar slants composed of:

23 Gm. bacto nutrient agar (Difco)	2.3%
5 Gm. CP NaCl	0.5%
10 Gm. bacto tryptose (Difco)	1.0%
5 Gm. bacto liver (Difco)	0.5%

Routine identification of *Ery. rhusiopathiae* was made by: (1) smears of tissue from dead birds; (2) the characteristic colony formation, morphology, and staining; and (3) occasional cultures on Kligler's iron agar and on carbohydrates.

RESULTS

Flock 1.—This flock was on a farm on which no turkeys had been kept for the four previous years but on which, prior to

Scientific paper No. 1307, Washington Agricultural Experiment Stations, Pullman, Project 960.

Associate veterinarian (Jerstad), Western Washington Experiment Station, Puyallup; and bacteriologist (Johns), Washington State Department of Agriculture, Puyallup.

The work reported in this paper was made possible by the financial assistance of Lederle Laboratories, Division of American Cyanamid Company, Pearl River, N. Y., in the form of a grant and indemnities paid to cooperators for losses due to erysipelas in their turkey flocks. They also furnished the bacterin for the trials.

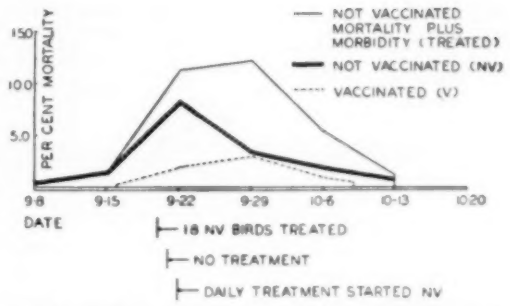
To the turkey growers who cooperated in the project and materially assisted in collection of the data, we extend our full appreciation.

[1]Dickinson, E. M., Jerstad, A. C., Adler, H. E., Cooper, Murray, Babcock, W. E., Johns, E. E., and Bottorff, C. A.: The Use of an Erysipelothrix Rhusiopathiae Bacterin for the Control of Erysipelas in Turkeys. Proc. Book, AVMA (1953): 370-375.

that, there had been periodic losses from erysipelas. An earlier hatch on this farm had experienced a considerable loss from erysipelas, but it had been controlled with penicillin therapy just prior to the time the flock was selected for the experiment. The flock, consisting of toms, was 132 days old when 495 were injected intramuscularly with 2.0 ml. of the bacterin on Aug. 6, 1952. Unvaccinated controls numbered 1,043. The first loss from erysipelas occurred in a control the thirty-third day after vaccination of the principals. The erysipelas losses and the total mortality in this flock, together with a morbidity estimate in the controls, are shown graphically by weekly totals in graph 1.

Of 200 unvaccinated turkeys showing symptoms of erysipelas, which were banded and treated with penicillin, 167 recovered. None of the vaccinated turkeys were treated. Three penicillin-treated culls, killed and examined October 21, showed emaciation, swollen joints, and breast abscesses. Bacterial cultures of their internal organs were negative; therefore, in table 1 these 3 turkeys were classified in the "nonerysipelas" mortality group. From 21 of the 30 treated controls which died, no organisms were recovered, although 8 of the 21 gave positive findings on blood smears. However, the 21 were considered to have died of erysipelas since all birds presented a typical postmortem picture of erysipelas.

No vaccinated bird died until eight days after losses were in progress among the controls (graph 1). On September 20, with losses increasing, 18 unvaccinated controls were treated. None were treated the following day, but on September 22, daily treatment of all sick controls began. A dose of 200,000 units of aqueous solution of one part crystalline penicillin potassium G and three parts procaine penicillin for each bird soon stopped the losses. Despite the fact that no vaccinated birds were treated, their

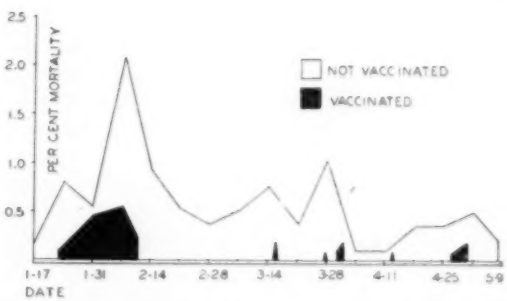


Graph 1—Percentage of erysipelas mortality and morbidity in flock 1 by weekly totals.

death losses ceased at the same time.

The above flock was marketed in late October after erysipelas losses had subsided.

Flock 2.—Flocks on this farm had suffered losses from erysipelas for several years. On October 9, when 161 days old, 741 of 1,388 hens were injected with bacterin, and on October 31, when 183 days old, 110 of 202 toms were injected. In both cases, 2.0 ml. of bacterin was given intramuscularly. The first erysipelas loss in the hens occurred ninety-nine days after vaccination; in the toms, seventy-seven days after



Graph 2—Percentage of erysipelas mortality by weekly total in flock 2.

vaccination. The erysipelas and nonerysipelas mortality are shown in table 2 and the erysipelas mortality by weekly totals in

TABLE 1—Summary of Mortality in Turkey Flock 1 with Estimated Erysipelas Morbidity in Unvaccinated Controls from Time of First Erysipelas Death

	Vaccinated	Unvaccinated		
Cause of mortality	No. died/No. in group (%)	No. died/No. in group (%)	No. treated & recovered/No. in group (%)	Erysipelas deaths + No. treated and recovered/No. in group (%)
Erysipelas	32/495 (6.5)	170/1043 (16.3)	167/1043 (16.0)	337/1043 (32.3)*
Nonerysipelas	7/495 (1.4)	11/1043 (1.1)	not treated	
Total	39/495 (7.9)	181/1043 (17.4)	167/1043 (16.0)	337/1043 (32.3)*

*This figure is considered to represent combined erysipelas mortality and morbidity estimates in this group.

TABLE 2—Summary of Erysipelas, Nonerysipelas, and Total Mortality in Turkey Flock 2 from Time of First Erysipelas Death to End of Breeding Season

Cause of mortality	No. of vaccinated birds died/No. in group (%)		No. of unvaccinated birds died/No. in group (%)	
	Hens	Toms	Hens	Toms
Erysipelas	15/741 (2.0)	5/110 (4.6)	61/647 (9.4)	15/92 (16.3)
Nonerysipelas	5/741 (0.8)	3/110 (2.7)	1/647 (0.2)	0/92 (0.0)
Total	21/741 (2.8)	8/110 (7.3)	62/647 (9.6)	15/92 (16.3)

graph 2. The first deaths from erysipelas, as in flock 1, occurred in unvaccinated controls, the first vaccinated bird dying of erysipelas six days later. From February 12 to March 15, only controls died of erysipelas although artificial challenge, on February 3, as reported by Dickinson *et al.*[1], resulted in 100 per cent erysipelas deaths in 8 vaccinated and 8 control birds from this flock.

Flock 3.—This flock also was on premises where there had previously been erysipelas losses. When 112 days old, 1,078 hens and 132 toms were injected intramuscularly with 2.0 ml. of the bacterin, while 830 hens and 123 toms were left as controls.

The first recorded loss from erysipelas in this flock occurred in a control on December 10, 135 days after inoculation. Two toms, their vaccination status unknown, had died about a week previously but were not examined. The first vaccinated bird to die of erysipelas was a tom, on December 11. The owner of this flock did not submit complete records of dates of death; hence, graphic presentation of mortality is not possible. Sixty-five (approximately 8%) of the 830 control hens died by January 24. The corresponding figure for the vaccinated hens was 14 of 1,078 (1.3%). Of the toms, 18 of 123 controls (14.7%) died of erysipelas, while 4 out of 132 (approximately 3.4%) of those vaccinated died of erysipelas. Total mortality during this period was 1.5 per cent in vaccinated hens and 8.2 per cent in unvaccinated hens. In toms, the total mortality for the vaccinated and unvaccinated birds was 3.0 per cent and 14.7 per cent, respectively. All differences in mortalities listed are highly significant by the *chi*-square test.

On January 24, when the birds were 292 days old, a portion of the hens and all of the toms were revaccinated with 2.0 ml. of the bacterin to determine if the already demonstrated resistance of those vaccinated could be increased. At the same time, of those not previously vaccinated, 706 hens were given either 2.0 or 3.0 ml. of the bacterin and 105 toms were injected with 4.0 ml. of the bacterin. As a precaution against possible mechanical spread of the disease during vaccination, each bird was given a simultaneous injection of penicillin in aqueous solution containing 12,500 units of crystalline penicillin potassium G and 50,000 units of procaine penicillin.

The results to the end of the breeding season (shown in table 3) are somewhat complicated by 2 unidentified hens which also died of erysipelas.

DISCUSSION

In the three flocks discussed in this paper, the erysipelas losses started in the susceptible birds not given bacterin, although in flock 3 the difference was only one day. However, 2 unidentified and unexamined toms in flock 3 died about a week earlier and may have been unvaccinated controls that died of erysipelas. If so, the pattern in the three flocks is identical, with the first deaths from erysipelas occurring in unvac-

TABLE 3—Summary of Erysipelas Mortality in Turkey Flock 3 by Groups After Vaccination at 112 and/or 292 Days of Age

Group (No.)	Vaccination data: Sex	Age (days)	Birds (No.)	Dose (ml.)	Mortality: Erysipelas (No.)*	Erysipelas (%)*	Nonerysipelas (No.)	Nonerysipelas (%)	Total (No.)	Total (%)
1	F	Controls	100	none	8	(8.0)	1	(1.0)	9	(9.0)
2	F	112	100	2.0	2	(2.0)	0	(0.0)	2	(2.0)
3	F	292	100	2.0	4	(4.0)	0	(0.0)	4	(4.0)
4	F	292	606	3.0	20	(3.3)	2	(0.3)	22	(3.6)
5**	F	112	908	2.0	8	(0.9)	4	(0.4)	12	(1.3)
		292		2.0						
6**	M	112	128	2.0	2	(1.6)	0	(0.0)	2	(1.6)
		292		2.0						
7	M	292	105	4.0	2	(1.9)	0	(0.0)	2	(1.9)

*In addition to the birds listed, 2 hens which could not be identified died of erysipelas. **Revaccinated groups.

cinated birds approximately one week prior to deaths in vaccinated birds.

The unvaccinated and vaccinated birds died from erysipelas at the approximate ratio of 5 to 1.

Of interest is the fact that in flock 1, where penicillin therapy was used on unvaccinated birds but not on vaccinated birds, losses subsided among the latter when it was controlled in the former. This may indicate that the outbreak not only originated in the susceptible controls but may have been largely perpetuated by them. In flock 2, in which only controls died of erysipelas from February 12 to March 15, it also appears that they may have been the primary perpetuation factor.

The challenge tests in those flocks reported by Dickinson *et al.*[1] can not be compared directly with the mortality experienced in these outbreaks, but it is obvious that the intravenous challenge test was an overly severe means of evaluating resistance to a natural exposure, the challenge, on February 3, in flock 2 resulting in the death of all vaccinated and unvaccinated birds. Just subsequent to this, deaths in the vaccinated birds in the flock ceased. A similar situation occurred in each of the other two flocks at one time or another.

From this and the Dickinson *et al.*[1] report, it appears that the bacterin can be used for the control of erysipelas in turkeys. Further trials are in progress and others are contemplated in an attempt to develop a practical vaccination program.

CONCLUSIONS AND SUMMARY

1) Erysipelas mortality and total mortality was lower in breeder turkeys vaccinated with 2.0 ml. of an *Erysipelothrix rhusiopathiae* bacterin than in unvaccinated controls in the same flock. The differences were statistically significant or highly significant, except in one instance.

2) No significant difference in mortality was found between groups of hens in the same flock vaccinated with either 2.0 ml. or 3.0 ml. of the bacterin at 292 days of age.

3) Highly significant increased resistance to erysipelas was demonstrated in a group of hens given 2.0 ml. of the bacterin at 112 and again at 292 days of age when compared with hens in the same flock given 3.0 ml. at 292 days of age only.

4) No significant difference in mortality was demonstrated between a group of toms vaccinated twice with 2.0 ml. at 112 and 292 days of age and another group of toms in the same flock given 4.0 ml. of the bacterin at 292 days of age only.

Azoturia Common in Polo Ponies

In Pietermaritzburg, South Africa, where three major polo tournaments are held annually, each engaging more than 500 visiting horses, over 100 cases of azoturia have occurred in recent years. In August, 1953, 16 shipped horses had been without exercise but on good rations for four days. Within one hour after they appeared on the polo field, 6 were down with azoturia.

Typical symptoms included sweating, stiff gait, and an unwillingness to move. In all cases only the hind limbs have been affected and sometimes only one limb, the affected loins and quarters having been extremely tense and "rock-like." The urine was generally coffee-colored and usually was retained. Probably because of the prompt detection there have been no mortalities, some cases having recovered in a few minutes, others having shown stiffness for two or three days. Prompt, complete rest is essential. Other treatment consisted of keeping the animal warm, 200 to 350 cc. of a 10 per cent calcium borogluconate solution given intravenously, 1,000 units of vitamin B_1 intramuscularly and, in some cases, 1.5 mg. of neostigmine methylsulfate (available in the U.S.). This treatment was repeated in twenty-four hours if necessary. Reduced rations when not exercising and a course of B_1 injections for predisposed horses are recommended.—*J. South African Vet. M. A., March, 1954.*

Antibiotics and Fecal Microflora

When four antibiotics were fed to turkey poults in an all-vegetable protein ration, each produced an increased growth response and each affected the fecal microflora. However, when injected intraperitoneally, only chlortetracycline produced a growth increase and an effect on the fecal microflora. Chloromycetin® affected the fecal microflora without increasing growth, while penicillin and bacitracin affected neither the growth nor the fecal microflora. Except where chloromycetin was given intraperitoneally, a growth increase resulted whenever the fecal microflora was affected.—*Poult. Sci., March, 1954*

Streptococcic Enzymes in Treatment of Pathological Processes Complicated by Purulent Exudates

W. J. ZONTINE, D.V.M.

Lancaster, California

THIS REPORT presents results following a new form of therapy, enzymatic debridement with streptokinase-streptodornase* (SK-SD), in the treatment of conditions in animals complicated by the presence of purulent exudates. Streptokinase and streptodornase are substances excreted by hemolytic streptococci, group C, into culture medium during growth. They are separated from the bacteria, purified, and filtered before freezing and drying.

There is little data on the *in vivo* activity of streptokinase in animals, its activity being observed chiefly as the substrate of human plasminogen, the humoral enzyme which causes the lysis of fibrin. Streptodornase, however, is active upon caseous or purulent exudates regardless of the species of origin. In domestic animals, SK-SD reduces the viscosity of pus, changing coarse sediment or coagulum to a thin, milky-type fluid, making aspiration or drainage possible.[1] The enzyme is effective only when it is in intimate contact with exudate, and its activity is enhanced by thorough distribution throughout the caseous exudate mass by gentle manipulation or injection in several places. In general, the larger the amount of SK-SD solution used, the shorter the time for complete liquefaction to take place. Established surgical procedures, such as wound drainage or the aspiration of fluids, should be used first, as enzyme treatment is necessary only when exudate is retained.

CLINICAL USE

In all cases covered by this report, 1 vial of SK-SD, containing 25,000 units of streptodornase and 100,000 units of streptokinase, was reconstituted in 250 or 500 cc. of sterile saline solution. These are considered highly dilute solutions. Fresh solutions were usually used but, in some cases, solutions were held under refrigeration. The method of application and the amount applied varied according to the condition treated. Where topical application was possible, gauze packs saturated with the solution were placed on the area. In closed spaces, any free fluid was aspirated and SK-SD was applied directly into the area, or the area was irrigated with the solution. Drainage was established, surgically if necessary, or liquified pus was aspirated, and the wounds were cleaned by irrigation with saline solution.

Seven dogs and 2 cats were treated with a concentration of 100 units of streptodornase per cubic centimeter of solution, and 6 dogs, 57 cats, and 4 cows were treated with concentrations of 50 units of streptodornase per cubic centimeter of solution. Conditions treated included: (1) canine cases of infected, crushed limbs, infected wounds of the head and back, infected compound fractures, abscesses of the back and anal glands, puncture wounds with sinus tracts, and chronic otitis; (2) feline cases of abscesses of the leg, tail, foot, and maxilla, multiple wounds caused by accidents, compound fractures, and cystitis; and (3) suppuration of frontal sinuses following dehorning in cows. When treated, these conditions had been present for one to twenty days. Where indicated, curettage and other surgical procedures were used before application of SK-SD and, in most cases, antibiotics or sulfonamides were administered parenterally or topically in conjunction with enzyme therapy. In all these cases, the removal of purulent or caseous exudate was a prerequisite to treatment.

In the majority of cases, a beneficial effect was evident in twenty-four hours. Rapid clearing of the wound or abscess area and the appearance of healthy granulating tissue usually followed the first application of SK-SD. In the treatment of 2 early cases—a large infected back wound in a dog and leg abscess in a cat—the enzyme solution used had been held under refrigeration for four and five days, respectively, and no response, was observed.

Dr. Zontine is a general practitioner in Lancaster, Calif.

*Varidase (streptokinase-streptodornase) is produced by Lederle Laboratories, Pearl River, N. Y.

[1]Kral, Frank: Equine Sinusitis—A New Therapeutic Approach. J.A.V.M.A., 124, (May, 1954): 373-376.

However, fresh solutions of regular commercial material were then applied, with immediate improvement. On the other hand, a cat with an abscess of the maxilla and a dog with an infected wound through the temporalis muscle improved rapidly when treated with a six-day-old solution. In general, there appeared to be little difference in response to the two concentrations used. Marked results have been obtained in the treatment of necrotic wounds, some of which are here described in more detail.

Necrotic Wounds.—A 5-year-old mixed Chow had both hind legs below the hock badly crushed in an automobile accident. There were numerous compound fractures of the metatarsal bones in both legs. The right leg was the least damaged, and an attempt was made to align the bones surgically. The left leg was so badly crushed that it was considered hopeless, and superficial therapy was employed until it could be amputated. Both legs were immobilized in metatarsal splints and various types of ointment therapy were used. The legs remained necrotic, moist, and foul-smelling. On the fifth day, a solution containing 100 units of streptodornase per cubic centimeter was used as a wet dressing and when removed the following day a marked change was seen in the lesions. The necrotic tissue was absent, the remaining tissue was dry with a healthy, granulating appearance, and the odor was gone. Wet dressings were then applied daily for five days until no trace of necrotic tissue remained. Both legs healed well, the left leg actually appearing stronger and developing less scar tissue than the right leg on which surgery had been employed.

A similar condition in a 4-month-old Collie was treated in a like manner with similar results. In this case, sufficient healthy granulation tissue was present on the eighteenth day to employ seed skin grafts and, by the seventieth day, healing was complete.

Two cats with multiple wounds and fractures caused by mowing machines were treated with equally good results. In 1, the tail was severed 2 inches from the base, the toes were missing, and leg bones were exposed. For the first two days, SK-SD was applied in jelly, but the jelly dried out in twenty-four hours and bandages adhered to the wounds. However, when dressings were saturated with solution two to three times daily and changed at 48-hour intervals, all wounds became dry and granulation appeared in a week. Wet dressings were then discontinued and ointments were applied. When seen two months later, the cat showed only slight impairment of motion.

CHRONIC OTITIS

Four cases of chronic otitis have been treated with SK-SD. In 1 dog, a bilateral ear drainage operation had been performed, but after four months, discharge and ulceration were still present. A solution containing 100 units of streptodornase per cubic centimeter was then dispensed to the owner for daily irrigation. At the end of one week, the discharge had diminished and in two weeks the ear canals were normal. However, the other 3 cases, which had ulcerative otitis and considerable tissue proliferation, showed no response following five daily irrigations and wet packs with similar solutions. Better results might have been obtained with less dilute solutions or with the application of the jelly at the recommended concentration.

FELINE ABSCESSES

Abscesses in cats are usually troublesome. The first 6 cases treated were lanced, any free fluid was aspirated, and the cavity was then irrigated with SK-SD. Clinical improvement was evident in twenty-four hours with clinical recovery in three to five days. However, in 2 of the 6 cases the abscesses recurred. Re-treatment, consisting of curettage followed by irrigation with SK-SD and with penicillin administered parenterally, resulted in rapid recovery and no recurrence.

Fifty cases of abscesses in cats have been routinely treated with SK-SD and the only recurrences were the 2 where currettage was not performed. This experience emphasizes that, as in human medicine, enzymatic debridement does not obviate the need for surgical procedures but should be regarded as an adjunct to surgery and to other recognized methods of management and therapy.

SUPPURATIVE SINUSITIS IN COWS

Four cases of suppuration of the frontal sinuses following dehorning have been treated. One vial of SK-SD reconstituted in 500 cc. of sterile saline solution was used to irrigate the sinuses daily until no

purulent material was observed in the refuse solution. Sulfanilamide powder was then insufflated into each affected sinus. Clinical recovery followed in two to seven days.

COMMENT

The cases described in this report are merely an indication of some of the uses of enzymatic debridement. All SK-SD therapy has been on an individual basis, the treatment depending upon a careful clinical evaluation of its effect. The results in our practice have been excellent. The rapid and complete removal of purulent or caseous exudate from the affected area by the SK-SD therapy has, compared to past experience with other treatments for similar conditions, promoted earlier recovery and minimized the necessity for re-treatment. This enzyme therapy would seem to have a definite place in the veterinarian's armamentarium.

Practical Aspects of the Use of ACTH in Treating Bovine Ketosis

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From the viewpoint of the veterinary practitioner, new concepts of therapeutics, to be of value, must be translated into practical applications. Also, because of the limited number of cases which confront him at any one time, the inadequate opportunities for a thorough follow-up of his cases, and the lack of readily available diagnostic aids, it is often difficult for the practitioner to evaluate a new therapeutic agent. With these limitations in mind, the following report is presented.

More than 180 field cases of bovine ketosis were studied for the purpose of evaluating the comparative merits of adrenocorticotropic hormone (ACTH)* and conventional glucose therapy. Conventional intravenous glucose therapy was used in the treatment of 75 cases; and ACTH, in doses ranging from 120 to 600 I.U., was used intramuscularly in 100 cases. In 7 cases, a combination of ACTH and glucose was employed. In all instances of delayed response, treatment was repeated as indicated.

In this series, prior to treatment, blood glucose concentrations were found to range from 22 to 65 mg./100 cc. of blood. Most of the values were below the normal of 40 to 60 mg./100 cc. of blood. Comparison of the response to the various therapeutic procedures indicated that recovery could be brought about with glucose alone, but the over-all response was slower and less efficient than that obtained with ACTH. A fresh cow seems to have an impetus to produce which is involuntary on her part, and if signs of stress occur at the time of freshening, they must be corrected promptly, or she will produce less during the entire lactation period.

In 60 per cent of the cases, complete recovery was obtained with a single injection of ACTH, but in the remaining 40 per cent, several injections were necessary. ACTH therapy, which combats but does not eliminate stress, will not produce a permanent or lasting effect if the stressing agent is not removed.

In most cases, ACTH alone seemed to be a more satisfactory treatment than glucose alone. The use of glucose with ACTH did not appreciably alter the recovery rate, except in isolated, stubborn cases. Such cases may respond to 500 cc. of 50 per cent dextrose and 180 units of ACTH given simultaneously.

In the work reported here, a dose of 120 to 180 units of ACTH appeared to provide a practical, efficient approach to the treatment of ketosis.

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The author acknowledges the aid of Dr. James V. McCahon in making available many of the clinical cases of bovine ketosis studied in this work.

*Adrenomone R is the registered trade-name for veterinary ACTH, Armour Veterinary Laboratories, Chicago, Ill.

Antithyroid Action of Antibiotics

Because of the growth effect of antibiotics on some animals, their actions upon the thyroid gland was studied. Chlortetracycline or potassium penicillin G (1 mg./kg. of body weight) was fed to rats for forty-two days. The rats were then given radioactive iodine intravenously and were killed in forty-eight hours. The thyroid glands of rats fed penicillin were twice as large as the glands of those fed chlortetracycline and four times as large as the controls. In both treated groups, the uptake of iodine by the thyroid was about one fourth as great as that of the controls, indicating that the antibiotics did inhibit thyroid activity.—*Science, Jan. 22, 1954.*

Spontaneous Hepatomas in Two Woodchucks and a Carcinoma of the Testis in a Badger

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REPORTS OF neoplasms in different species of wild animals have been published by Fox,[1] Ratcliff,[2] Feldman,[3] and Willis.[4] These reports are valuable to the pathologist using wild animals in the study of neoplasms, because they assist him in distinguishing experimental tumors from those that occur spontaneously. These reports are also of value because the neoplasms of wild animals closely resemble those of man and other mammals.

Three tumors are described in this report: Two are hepatomas found in woodchucks (*Marmota monax*), 1 of which was captured near Bethesda, Md., in 1950 and the other was obtained from the National Zoological Park, Washington, D. C., in 1953; the third is an embryonal carcinoma of the testis found incidentally in a badger (*Taxidea taxis*) being used for endocrine studies at the University of Missouri in 1938.

CLINICAL DATA—CASE 1

In September, 1950, a crippled woodchuck was brought to the National Institutes of Health, Bethesda, Md. It was weak, easily caught, and bleeding from the vulva. It died within an hour after arrival.

Necropsy Findings.—The 15-lb., mature, female woodchuck was in fair condition but the skin and mucous membranes were pale and there was clotted blood around the vulva. The liver weighed 272 Gm. and contained a tumor measuring 7.5 by 6.5 by 4.5 cm. The tumor was located in the hilus of the liver and was separate from the gall bladder and large bile ducts (fig. 1). Grossly, the tumor was a bean-shaped, lobulated, firm mass, white in color and streaked with irregular reddish areas. On section, the tumor showed a multilobulated yellowish mass with large hemorrhagic areas. On the serosal surface of several of the lobes of the liver were raised white plaques. The urinary bladder wall was thickened and of parchment consistency. The bladder measured 11.5 by 2.0 cm. and was filled with clotted blood, but no bleeding point could be identified. The kidneys were pale, the capsule stripped with ease, and a blood clot was in the pelvis. The other abdominal and thoracic organs appeared grossly normal.

Bacteriological cultures of the lungs, heart blood, liver, spleen, and kidneys on blood agar and Sabouraud's medium gave no growth. A moderate number of hookworms and a few coccidia were found in a salt flotation examination of the feces.

Microscopical Data.—Liver.—Sections of liver showed destruction of the normal architecture by a tumor composed of short, plump cords and nests of large polygonal cells with granular and often vacuolated cytoplasm and large oval nuclei with prominent acidophilic nucleoli. Some of the cells had hyperchromatic nuclei, others were multinucleated, and a few had pale vacuolated nuclei. The tumor cells formed various-sized nodules, and one about 2 mm. in diameter compressed the

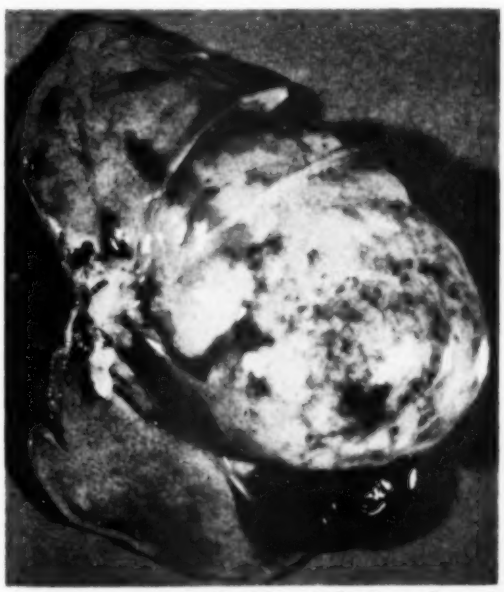

Fig. 1—Hepatoma in the hilus of the liver of woodchuck 1.

From the National Institute of Arthritis and Metabolic Diseases (Habermann and Williams) and the National Cancer Institute (Eyestone), National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare, Bethesda, Md.

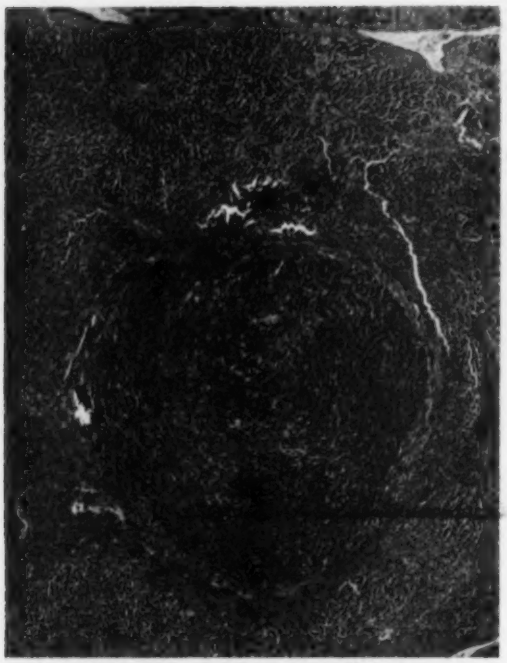

Fig. 2—Nodule of hepatoma, woodchuck 1, compressing nearby tissue. x 20.

surrounding liver tissue (fig. 2). The tumor mass was separated into irregular lobules by dense strands of fibrous connective tissue infiltrated with lymphocytes, plasma cells, and macrophages containing yellowish brown pigment. Scattered in the tumor were foci of cystic degeneration containing mucoid material and hemorrhagic areas (fig. 3). The veins were dilated and scattered foci of multinucleated giant cells were present. External to the tumor, the liver presented a normal architecture with no scarring or other evidence of previous inflammatory process.

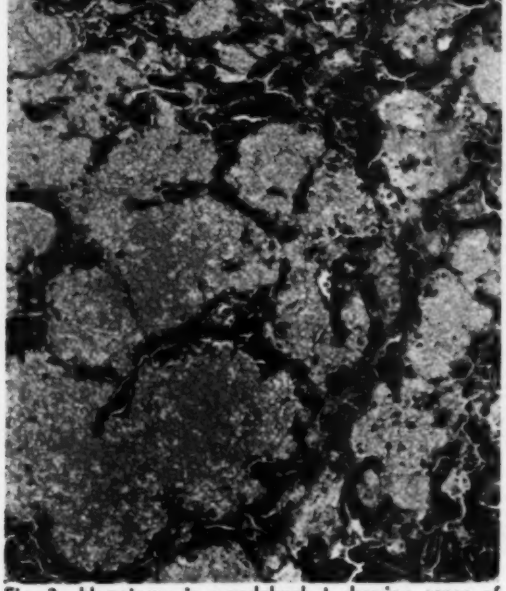

Fig. 3—Hepatoma in woodchuck 1 showing areas of degeneration. x 105.

Lungs.—Section of the lungs showed slight peribronchial infiltration of lymphocytes and some mucoid exudate in the bronchi. There were also small areas of atelectasis.

Kidneys.—On section, the kidneys showed hyperemia and moderate quantities of blood in the renal pelves and in a few of the collecting tubules. However, no lesions were present in either glomeruli or tubular epithelium, and the point of origin of the hemorrhage was not demonstrable.

Spleen.—A section of the spleen showed normal follicle formation and considerable quantities of yellowish brown pigment in the littoral phagocytes.

Sections of pancreas and large bowel showed no lesions.

CLINICAL DATA—CASE 2

An aged female woodchuck, weighing 15.4 lb., was presented for necropsy at the National Zoological Park, Washington, D. C., in September, 1953. No clinical data were available.

Necropsy Findings.—After fixation in 10 per cent formalin, the liver weighed 285 Gm. A large nodular tumor, projecting from the dorsal surface of the left anterior lobe, measured 5 cm. in diameter and 3 cm. in thickness (fig. 4). On cut section, it was grayish white, lobulated, and sharply demarcated from the surrounding liver. The tumor tissue was firm. The other lobes of the liver did not contain tumor.

The pleural cavity contained 200 cc. of sanguineous watery fluid and the lungs were edematous. The heart showed marked congestion, both ventricles and auricles being distended with blood. Other organs, including the central nervous system, showed no gross lesions.

Microscopical Data.—Liver.—Extensive fatty metamorphosis of the liver was demonstrated with Sudan III stain. The periodic-acid Schiff reaction was positive in a few of the liver cells, but not when diastase was used prior to the reaction, indicating the presence of glycogen. Adjacent to the periphery of the tumor was condensation of the liver parenchyma and an accumulation of bile ducts, probably the result of retention of these elements following atrophy of the liver (fig. 5). Bile pigment was identified in the canaliculi of the compressed liver parenchyma, whereas none was seen in the tumor.

The tumor cells were generally polygonal, showed a more intense basophilia than the hepatic cells of the nontumorous portion, and tended to form cords in places (fig. 6). There was a complete absence of bile ducts. The nuclei were centrally placed and usually contained one large, dense nucleolus and coarse chromatin. One small area of the tumor was composed of multinucleated giant cells of the type seen in hepatomas of man and dogs. Mitotic figures were occasionally observed. There was fairly abundant cytoplasm in the tumor cells and vacuoles were seen. Sudanophilic material was demonstrated, but no periodic-acid, Schiff-positive material was seen. Inclusion bodies were not observed in either the tumorous or nontumorous areas. No metastatic tumor was seen in the necropsy tissues.

Lungs.—There were marked congestion and edema in the lung sections.

Pancreas.—Focal necrosis, possibly postmortem, was noted in the pancreas.

Fig. 4—Anterior surface of the liver of woodchuck 2, showing hepatoma bulging from surface.

CLINICAL DATA—CASE 3

This tumor was an incidental finding in 1 of a number of badgers obtained for use in endocrine investigations by the Department of Anatomy at the University of Missouri, School of Medicine, in 1938. The animal was sluggish and lacked the combativeness characteristic of the species. It was killed and postmortem examination revealed the presence of a large tumor of the testis with metastases to the para-aortic lymph

*Dr. James H. Peers, formerly with the National Institutes of Health, Bethesda, Md., and now at Loyola University, Chicago, Ill.

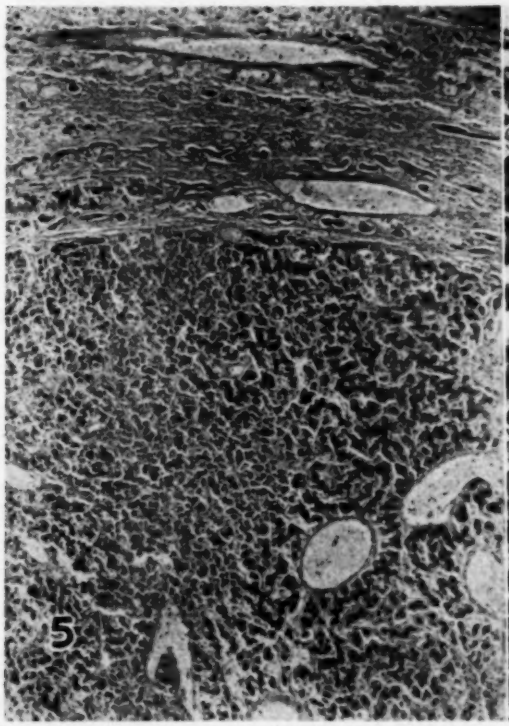

Fig. 5—The hepatoma in woodchuck 2, showing condensation of liver parenchyma at the periphery with atrophy of liver cords and retention of bile ducts. x 50.

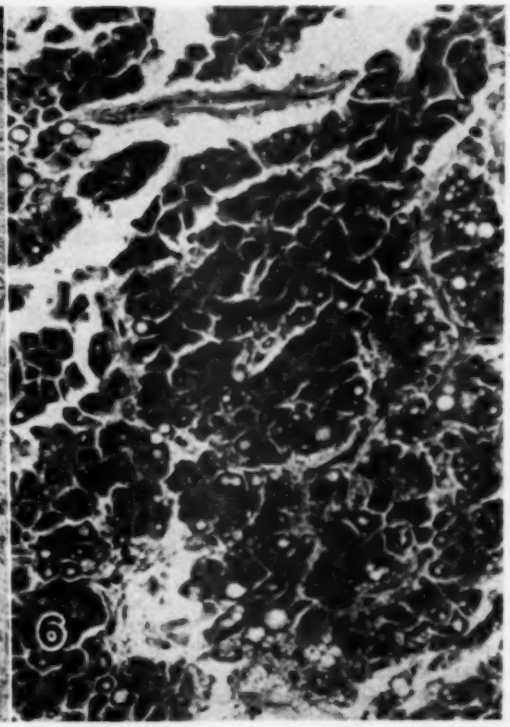

Fig. 6—The hepatoma in woodchuck 2, showing disorientation of architecture, vacuolization of cytoplasm, margination of chromatin, and prominent nucleoli. x 200.

nodes and lungs. The tissues were turned over to Dr. James H. Peers* for histopathological study. In both the primary and metastatic tumors, the tissue was soft, grayish, and translucent, with large central yellowish areas of necrosis and hemorrhage.

Microscopical Data.—Tumor.—On section, the tumor showed nests of plump cords of closely packed large polygonal cells, having granular acidophilic cytoplasm and large irregular nuclei. The nuclei usually contained one to three prominent nucleoli or had dense strands of chromatin material condensed around the periphery of the nuclear wall. The tumor was irregularly lobulated with bands of wavy and dense fibrous connective tissue. The section showed large areas of necrosis and scattered hemorrhagic areas (fig. 7). In some of the necrotic areas, there were islands of tumor cells having a central blood vessel and infiltrated by lymphocytes (fig. 8). The veins were large and distended with blood. On microscopic examination of the lungs, what were thought grossly to be large subpleural tumor nodules were found to be circumscribed foci of pneumonic consolidation. Deep in these pneumonic areas were a number of small tumor deposits, 0.5 to 1.0 mm. in diameter, lying in the alveoli and rarely in peribronchial lymphatics or small veins.

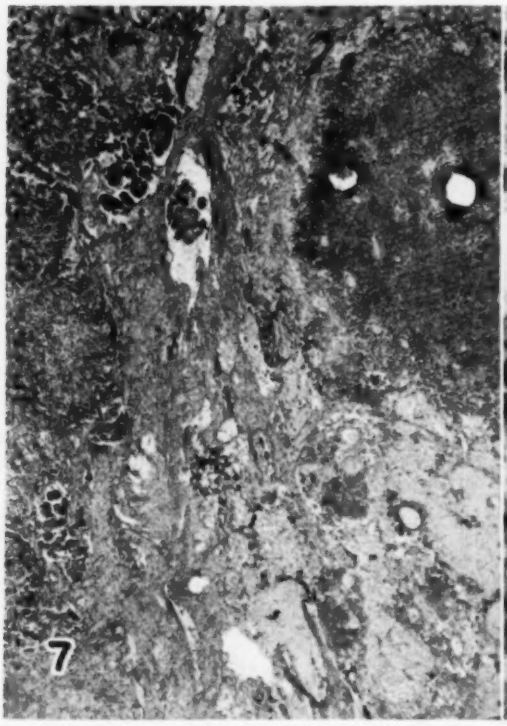

Fig. 7—Carcinoma of the testis of the badger, showing areas of degeneration and hemorrhage. x 18.

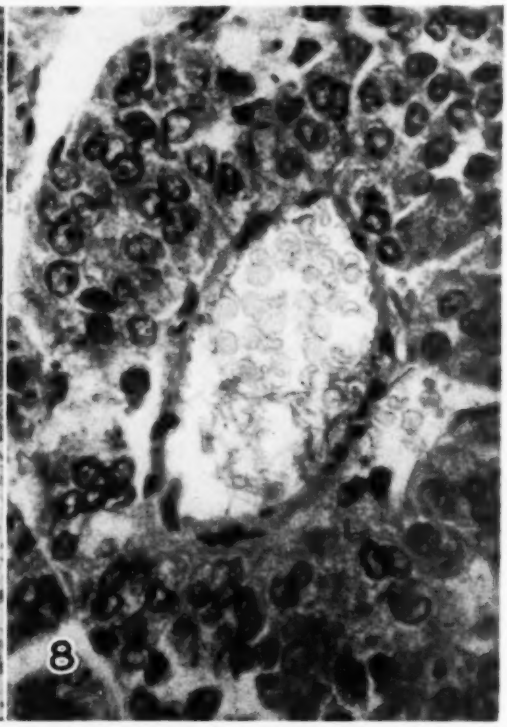

Fig. 8—Carcinoma of the testis of the badger, showing island of neoplastic cells around a central blood vessel. x 700.

SUMMARY

Three cases of spontaneous malignant tumors occurring in wild animals have been described. Two were massive hepatomas in woodchucks. The other was an embryonal carcinoma of the testis in a badger with metastases to the para-aortic lymph nodes and lungs.

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Swine and human influenza viruses were shown to be significantly different when the antigenic qualities of several strains of each were compared.—*Vet Bull., Jan., 1954*

A Combination of Neomycin Sulfate and Polymyxin B Sulfate for Bovine Mastitis

A. B. CHRISTIAN, D.V.M.; J. R. HARRIS, D.V.M.; F. S. BARR, B.S.

Asheville, North Carolina, and Bristol, Tennessee

BOVINE MASTITIS is still a difficult disease to treat despite improved therapy and dairy sanitation. Although suitable therapy is available for specific infections, the lack of identification of the actual causative organisms complicates the treatment. There is no known practical method of examination in the dairy barn that will positively identify the infecting organism or organisms. Consequently, the trend in mastitis therapy is toward the selection of an agent or agents that have the broadest range of antibacterial activity.

Considerable data on the clinical effects of neomycin have been accumulated since its original announcement by Waksman and Lechevalier in 1949.[1] Depending upon the concentration, neomycin is either bacteriostatic or bactericidal against certain gram-negative and gram-positive bacteria.[2] Also, it rarely causes the development of resistant bacterial strains. Drury[3] concluded, after treating 405 cases of mastitis diagnosed by direct microscopic examination of incubated milk samples, that neomycin sulfate was effective against mastitis caused by streptococci, staphylococci, coliform organisms, and a yeast. Also, eight of 14 Pseudomonas infections responded to neomycin. Simon *et al.*[4] compared neomycin sulfate with crystalline penicillin G against chronic streptococcic mastitis and found it not as effective as crystalline penicillin G. Also, no apparent synergistic action between these two antibiotics was produced.

The wide antibacterial activity of neomycin sulfate and the fact that susceptible bacteria rarely become resistant to it warrants further study of this antibiotic in combinations with other antibiotics, particularly those with synergistic action. This study is to determine the value of neomycin sulfate and polymyxin B sulfate in combination as a treatment for bovine mastitis.

Polymyxin B sulfate was selected as a combination with neomycin sulfate because together they showed synergistic action *in vitro* against the common organisms causing mastitis.[5] Polymyxin B sulfate is produced by *Bacillus polymyxa*, isolated from English garden soil in 1945 by Ainsworth, Brown, and Brownlee.[6] This antibiotic is effective against a wide range of gram-negative organisms and, like neomycin sulfate, bacterial-resistant strains are difficult to produce. Polymyxin B sulfate is also considered to be superior to all other available agents against Pseudomonas infections.[7]

In selecting a suitable base for this combination, there were several factors to consider, particularly irritation and rapid release of the neomycin and polymyxin B within the mammary gland. Apparently, neomycin and polymyxin B have a different mode of action from penicillin. Although penicillin is a powerful antibacterial substance, it destroys susceptible bacteria only when they are suspended in a medium in which they are potentially capable of multiplying.[8] It has no effect on susceptible bacteria, even in high concentration, during their resting stage.

The *in vitro* testing of neomycin sulfate and polymyxin B sulfate against *Staphylococcus aureus* showed this combination to have an immediate bactericidal effect, killing the organism in less than one minute. On the basis of this information, it was apparent that a base was needed that would permit rapid release of the two antibiotics in the udder to produce their full therapeutic effect. Determination of the antibiotic levels within the lactating mammary gland was carried out by infusing 100 mg. of neomycin sulfate and 100,000 units of polymyxin B sulfate in an oil-in-water emulsion after the quarter had been thoroughly milked. Aseptically drawn milk samples were then taken at twelve-, 24-, 48-, and 72-hour intervals and tested against *Staph. aureus* and *Escherichia coli*. The milk samples collected were bactericidal to the test organisms at twelve, twenty-four, and forty-eight hours. It was concluded that neomycin sulfate and polymyxin B sulfate in an oil-in-water emulsion maintained an effective level within a lactating quarter for a sufficient length of time to kill susceptible organisms. The oil base used as a comparison did not produce a sufficient antibiotic-milk level in twelve hours, but did produce bactericidal results in twenty-four and seventy-two hours.

Dr. Christian is resident veterinarian, Biltmore Dairy Farms, Asheville, N. Car.; Dr. Harris and Mr. Barr are on the staff of S. E. Massengill Company, Bristol, Tenn.

Neomycin sulfate and polymyxin B sulfate was supplied as daribiotic (patent applied for) by the S. E. Massengill Company, Bristol, Tenn.

MATERIALS AND METHODS

Prior to the clinical trials with neomycin sulfate and polymyxin B sulfate, irritation studies on normal quarters were conducted. Using various strengths of neomycin sulfate and polymyxin B sulfate in an oil-in-water emulsion base, no irritation was encountered as determined by physical appearance of the quarters and by leukocyte count. No alteration of the milk or abnormal milk flow was observed.

The clinical phase of this study was done at the Biltmore Dairy Farms, Asheville, N. Car. Routine cases of mastitis that appeared in the milking herd were treated. When the physical appearance of the udder or the strip cup identified an infected quarter, a milk sample was aseptically collected and refrigerated until used. The milk sample was then plated out on trypticase-soy agar and incubated at 37 C. for thirty-six hours. At the end of this period, typical colonies were removed and stained by Gram's method and examined microscopically. The organism was also placed on differential mediums, as described in Bergey's manual,[9] and incubated for thirty-six hours at 37 C. At the end of this incubation period, the individual medium was observed and characteristics of the organism were classified according to Bergey.

After the infected quarter was thoroughly milked, it was treated with 100 mg. of neomycin sulfate and 100,000 units of polymixin B sulfate in an oil-in-water emulsion. Milk samples from the treated quarter were collected at intervals of twelve, seventy-two, and 120 hours, and a bacteriological examination, as previously described, was carried out. If the quarter was free of the infecting organisms 120 hours after treatment and producing normal milk, it was considered recovered.

RESULTS AND DISCUSSION

A total of 42 infected quarters were given a single treatment with 100 mg. of neomycin sulfate and 100,000 units of polymyxin B sulfate. Only four quarters required a second treatment.

Of 34 quarters with *Streptococcus agalactiae* infections, 30 were negative in twelve hours while four, treated a second time at the end of seventy-two hours, were negative thereafter. Of the 11 quarters with *Staph. aureus* infections, all produced a negative sample seventy-two and 120 hours after a single treatment. Likewise, two quarters infected with *Esch. coli* responded with a negative sample in twelve hours after a single treatment, and two quarters infected with *Pseudomonas aeruginosa*, which is considered difficult to treat, responded in seventy-two hours. One *Proteus vulgaris* infection also recovered with one treatment. Of interest was the rapid response this combination produced in Streptococcus infections, particularly since penicillin has been considered the treatment of choice for this infection.

SUMMARY

The results of this study showed neomycin sulfate and polymyxin B sulfate in an oil-in-water emulsion to be an effective therapy for mastitis caused by Streptococcus, Staphylococcus, Pseudomonas, Proteus, and coliform organisms. However, additional cases of Pseudomonas infection should be treated with this combination to fully establish its value against this organism. Also, a single infusion of this combination in an oil-in-water base produced immediate and prolonged antibiotic levels with no apparent irritation.

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Tick Paralysis in the Dog.—Tick paralysis was repeatedly induced in 4 laboratory dogs through the attachment of female *Dermacentor andersoni*. Apparently these attacks developed no immunity.—*Vet. Bull., June, 1954.*

A Proposed Procedure for Controlling Traumatic Gastritis

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TRAUMATIC GASTRITIS, caused by swallowed sharp metal objects, results in great economic loss to the cattle industry. Some abattoir operators report finding metal in the reticulum or rumen of as many as 90 per cent of the cattle they slaughter.

While testing dairy and beef cattle for brucellosis and tuberculosis in our practice area, we checked 300 with a metal-detecting device* and found 70 per cent apparently carrying metal. One herd, with an exceptionally careful manager, had only 50 per cent while another herd, where wire and nails were plentiful in the feedlots, had 90 per cent positive. The percentages may have been increased by two successive dry summers which had caused cattle in the area to graze close to the fences where bits of broken wire and staples are common.

In the majority of the cattle we examined, the metal was detected only in the region of the reticulum. An occasional animal would have metal indicated also in the rumen over the naval region. Bulls appear to have metal in both regions more often than cows, probably the result of gravity during their breeding action.

To date, surgery has been about the only method of combating these foreign bodies and then only after the animal has manifested symptoms of illness. We have not utilized surgery extensively because it seems economically unsound. By the time symptoms are manifested, the metal has migrated and damage may be severe.

Each animal with a positive metal reaction is a potential victim of traumatic gastritis, so the greatest need is for inexpensive methods of preventing the ingestion of the metal and of controlling its migration in the animal if ingested. The former control method depends upon careful management and the use on the feed of some magnetic sweeping device, several of which are on the market.

Small magnets have been used to remove metal from the stomach during rumenotomies.[1] Their success suggested that they might also be used prophylactically. With this in mind, we conducted a limited experiment using a small, powerful alnico bar magnet,** placed unattached in the animal's stomach. The magnet used is cylindrical, ½ inch in diameter and 2¼ inches long (fig. 1), composed of aluminum, nickel, and cobalt. It is considered one of the most powerful and permanent magnets on the market, and since this alloy is not subject to corrosion and the pH of the rumen is nearly neutral, its use is indicated.

The magnet, administered orally with a balling gun, should remain active in the reticulum or rumen during the life of the animal. It should pick up and hold metal objects, thus preventing damage to vital organs.

EXPERIMENTS

Experiment 1.—Five animals were given a magnet and were slaughtered† the next day. The magnets were found on the floor of the rumen in each animal, and each magnet had attracted considerable metal. All animals used in the first and second experiments had shown a metal reaction when previously examined with the metal detector.

Experiment 2.—Three cows were given magnets and, when slaughtered four days later, the magnets were found in the reticulum of 2 and on the floor of the rumen in the third. One cow, which had shown a marked detector reaction in the region of the reticulum, had a reticular abscess containing staples, and the magnet had migrated directly into the abscess (fig. 1 [2]). All magnets had attracted considerable metal.

Experiment 3.—In this experiment, 3 cows which were negative to the metal detector were used. After swallowing the magnet, each animal was given some eight-penny finishing nails in a gelatin capsule: a Hereford steer was given 18 nails; a Guernsey cow, 12; and a Holstein-Friesian cow, 24. At slaughter, fourteen days later, the magnets were on the floor of the rumen in all 3 animals. The number of nails given the Hereford and the Holstein-Friesian overloaded the magnets; however, most of the metal was attached to the magnets. In the Guernsey, all of the nails were attached to the magnet (fig. 1 [3]).

CONCLUSION

This procedure seems to be both feasible

Dr. Cooper is a general practitioner in Roanoke, Va.

*This device is D. P. No. 822697, Elektro-Geraetebau, made in Bavaria, Oberoelkofe, Germany. The distributor in this country is Stephen Jackson, Washington, D. C.

**Alnico V—part 27454, the Indiana Steel Products Co., Valparaiso, Ind.

†The Valleydale Packing Co., Salem, Va., provided cattle and facilities.

and harmless. It may be indicated when a metal detector survey indicates that many cattle in a herd are positive for metal, since one certainly would not feel justified in recommending wholesale surgery. Even

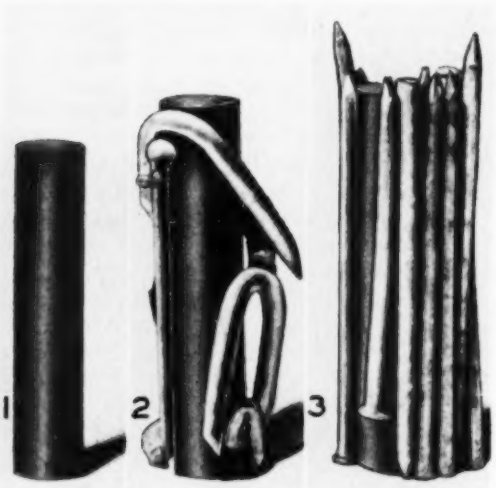

Fig. 1—The magnet (1), ½ inch in diameter by 2¼ inches long, which is administered per os with a balling gun. (2) Staples and wire attached to magnet recovered from a reticular abscess (experiment 2). (3) Magnet, as recovered from Guernsey in experiment 3, with the 12 nails given to her all attached.

with surgery, there is no assurance that the same animal will not ingest more metal. Conversely, it would appear that this use of a magnet should prevent the migration into vital organs of at least a portion of the metal ingested.

The cattlemen to whom we explained this procedure seemed receptive to the idea, especially to the suggestion that a magnet be administered before turning cattle out on certain pastures. Technical experts consulted also believe that this method of controlling the migration of metal in an animal's stomach would be both practical and welcome.

Being in practice, it is not feasible for us to continue extensive investigation of this problem, but we believe the results warrant further tests.

"Circling" pigs may be affected with listeriosis. For therapy, add 5 Gm. of terramycin® to 500 cc. of hog cholera antiserum, then inject intraperitoneally (1 cc./lb.).—*H. C. Smith, D.V.M., Iowa.*

Is This a Modified Hog Cholera?

A pneumonic condition developed in pigs in France, about six to ten weeks following vaccination with a "lapinized virus" used without serum. At first, the disease spread slowly in both vaccinated and nonvaccinated pigs, then it gradually accelerated. When other pigs were inoculated with material from these pigs, only those not immunized against cholera reacted, developing a persistent elevation in temperature but no lesions. When material from these reacting pigs was directly passaged three times in rabbits, spleen and blood emulsions from the third rabbit produced a mild cholera-like disease when injected into susceptible pigs. It was concluded that the lapinized virus vaccine was not entirely harmless.—*Bull. Acad. Vet. France, Dec., 1953, abstr. in The Auburn Vet., Spring, 1954.*

Heat Tolerance in Cattle

The skin area, in relation to a cow's body weight, was found at the University of Missouri to be a factor, as is hair color, in toleration of the sun's radiated heat. Thus the large breeds are less tolerant than small breeds but even a Jersey is less tolerant than the Brahmans because of the latter's large ears, dewlaps, and naval flap. As temperatures were raised, milk production in the larger breeds dropped faster than in the smaller. The lighter colored hair reflected more radiated heat but black hair efficiently reflected the infrared (heat lamp) radiation. While the shaggy winter coat provided body insulation, the fine, glossy summer coat reflected more of the sun's radiation.—*U.S.D.A. Release, July 27, 1954.*

Pulmonary Coccidioidomycosis in Man

A study of 50 human cases of focalized pulmonary coccidioidomycosis, 32 of them surgically treated since 1950, indicates that extirpative surgery is the treatment of choice. The condition is endemic to the Southwest but, in recent years, it has been found elsewhere in patients who were stationed in that area during military service. It results only from the inhalation of chlamydospores in the dust.—*J.Am.M.A., July 31, 1954.*

Spontaneous Perforation of a Gastric Ulcer in a Guinea Pig

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Melbourne, Australia

GASTRIC ULCERS in the lower animals are observed most frequently in the abomasum of the calf.

LITERATURE

It has been estimated that between the ages of 12 to 14 weeks, 98.0 per cent of calves are thus affected.[1] In 754 swine, 2.3 per cent had one or more gastric ulcers.[2] For comparison, in England and Wales the incidence of gastric and duodenal ulcers in man is estimated at 1.0 per cent.[3] In children between the ages of 1 and 16 years, only 40 authentic cases of chronic gastric ulcers have been reported during the last one hundred years.[4] Gastric ulcers have also been observed in the fox,[5] dog,[6] seal,[7] kangaroo,[8] fowl,[1] and a few other animals.[1,8]

From the scanty reports in the literature, it appears that gastric ulcers in animals are followed by fewer complications than are those in man. They rarely cause stenosis and none has been reported as becoming malignant.[8] Anemia and the presence of blood in the feces have been observed in association with a gastric ulcer in a boar.[9]

There are relatively few recorded cases of perforated gastric ulcers. Shillinger[5] reported perforating gastric ulcers in 8 ranch foxes. In a study of gastric ulcers in seals, Schroeder and Wegeforth[7] observed three perforations. A perforated peptic ulcer in a dog was reported by Schnelle and Arlein.[6]

Apart from a short announcement of a seasonal variation in the occurrence of gastric ulcers in guinea pigs,[12] reports of gastric ulcers in small laboratory animals have been generally limited to those produced experimentally.[1,10,11] The following case of a spontaneous perforation of an ulcer in the stomach of a guinea pig is of special interest.

CASE REPORT

History.—A female guinea pig had received 0.1 ml. of Old Tuberculin in a dilution of 1:100, to which it reacted negatively. As the animal appeared to be ailing, it was not treated any further but was kept under observation. During the next three weeks, there was little improvement and the animal failed to gain weight. One morning, it was found dead in its cage in the animal house of the department where BCG vaccine is produced.

The only other guinea pig which had shared the cage and treatment of the deceased animal also failed to gain weight. It suffered from what appeared to be a flaccid paralysis of its hind limbs and died ten days after its mate. No abnormalities were found in this animal.

From the Commonwealth Serum Laboratories, Melbourne, Australia.

In view of the importance attached to these animals for testing the BCG vaccine, they are housed in an air-conditioned room and are given special care and food. For the greater part of the year, they are fed lucerne and a dry mixture of crushed oats, chaff, bran, pollard, and salt. On this feeding, the animals thrive and spontaneous death is rare. During the winter months, when lucerne is not available, they are given oat grass. This substitution is not appreciated by the animals. It is generally associated with an increased

Fig. 1—Perforated ulcer in freshly removed stomach of a guinea pig. A dark rim of gastric mucosa surrounds the perforation which is filled by the lighter-colored contents of the stomach. The area which adhered to the undersurface of the liver can be seen to the right and below the ulcer.

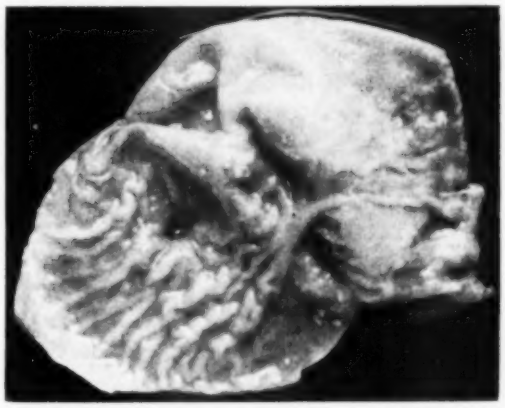

Fig. 2—The perforation on the mucosal side of the stomach after fixation in formalin.

Fig. 3—Section across perforated gastric ulcer, showing extension of gastric mucosa. Hematoxylin and eosin stain. x 7.

neonatal mortality in the litters, and the animals readily succumb to intercurrent infections.

Postmortem Findings.—The animal weighed about 200 Gm. A perforated gastric ulcer on the anterior wall of the stomach (fig. 1) was surrounded by necrotic material and walled off by adhesions to the under surface of the liver. The perforation itself measured 2 by 4 mm. and contained the contents of a full stomach. Surrounding the perforation and immediately adjacent to it was a soft, pink-colored, projecting lip which measured, including the central perforation, 7 by 5 mm.

The contents of the stomach were well digested and of semisolid consistency. No foreign body or undigested food was found. With both sides in view, the perforation appeared funnel-shaped and presented a clear, punched-out area in the wall of the stomach. No visible inflammatory reaction surrounded the perforation on the mucosal side (fig. 2).

Except for these abnormalities, the animal appeared essentially normal. There was no peritonitis, but the peritoneal cavity was unusually dry and it was with difficulty that a loopful of fluid could be obtained for culture. This, as well as material aspirated from the heart, remained sterile after aerobic and anaerobic culture. The brain was not examined.

Microscopic examination of a section across the perforation (fig. 3 and 4) showed

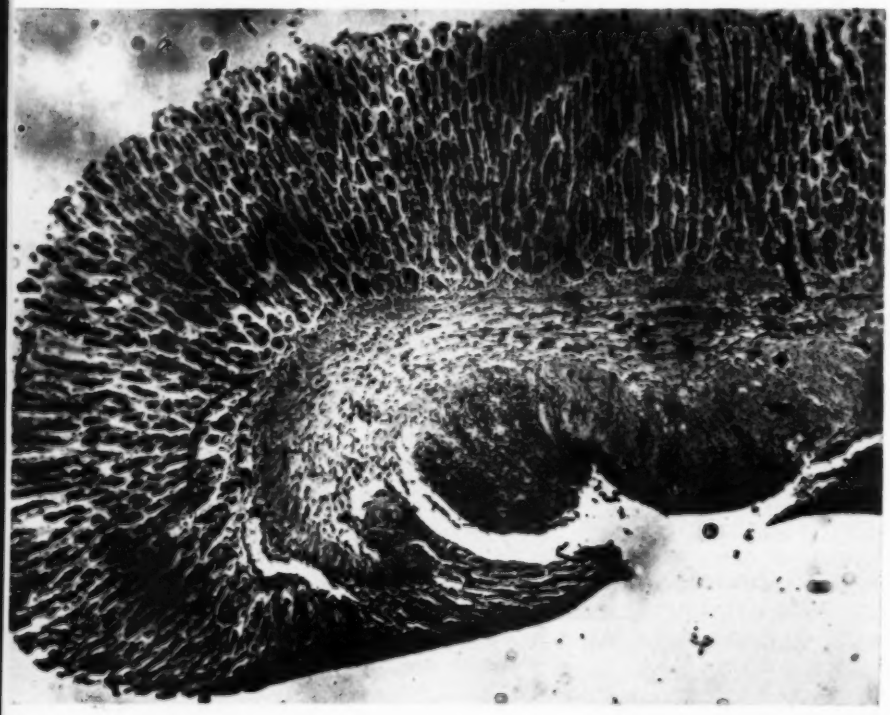

Fig. 4—The edge of the perforation, showing stratification of mucosal extension, submucosal edema, and cellular infiltration. Hematoxylin and eosin stain. x 65.

that the mucosa of the stomach, including the muscularis mucosae, had extended over the edges of the perforation to cover the peritoneal surface for about 2 mm. from the margins of the perforation. The epithelial cells near the peripheral border of this mucosal extension differed from the gastric mucosa in presenting a densely stratified appearance. Near the muscularis mucosae, several dilated blood vessels of normal structure were seen. In addition, a small collection of small round cells and polymorphs was present. These cells also infiltrated the somewhat edematous submucosa in the vicinity of the perforation. In the same area, some necrosis of the muscle coat was evident. For a short distance beyond the extension of the gastric mucosa, the peritoneal surface of the muscularis was covered by fibrinous, necrotic material in which numerous cell nuclei in various stages of degeneration could be seen.

Comment.—From the macroscopic and microscopic findings, it appeared that the perforation was a fairly recent one. There was little evidence of repair, although the perforation appeared to have been effectively walled off by adhesions to the undersurface of the liver. The extension of the mucosa along the margins of the perforation is typical of recent perforations in human beings and interferes with the healing of such cases. The absence of a definite inflammatory response, noticed in this case, seems to be characteristic of gastric ulcers in animals.[1] Schroeder and Wegeforth commented on the absence of inflammatory reaction, even where nematode larvae were present in the gastric ulcers of seals.[7]

In view of the absence of peritonitis or any microorganism that could be isolated, it is difficult to offer an explanation for the death of this animal. Equally obscure was the cause of death of the second guinea pig which shared the cage. The paralysis of the hind limbs of the latter suggests some vitamin deficiency. Randle *et al.*,[12] in 1940, issued a brief report on a new vitamin, present in milk, which prevents the development of stomach ulcers in guinea pigs. No further reports on this subject could be found.

Whether oat grass failed to supply these animals with a food factor present in lucerne, and whether such a deficiency predisposes guinea pigs to develop gastric ulcers, is a matter for speculation.

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Chronic Bronchitis of Swine

The chronic bronchitis which is prevalent in swine in Ontario, and which had been considered to be a pasteurellosis, more recently is believed to be primarily a virus disease (*see* JOURNAL, June, 1953: 467; Sept., 1953: 221; Nov., 1953: 430). However, Pasteurella organisms are still believed to be important secondary invaders. Acute outbreaks respond satisfactorily to intraperitoneal sulfonamide therapy or combined penicillin-streptomycin therapy.—*Canad. J. Comp. Med., June, 1954.*

[In northwest Iowa in 1950 and 1951, a similar condition was often a serious herd problem but Pasteurella organisms were seldom isolated and there was little, if any, response to sulfonamide or streptomycin therapy. Penicillin therapy produced definite but only temporary remissions.—ED.]

Experimental Evaluation of Culture and Serum Vaccination for the Control of Swine Erysipelas. V. Vaccination of Weanling Pigs Using a Change in the Dosage Relationship of Culture and Serum

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VACCINATION of weanling pigs with commercial desiccated live culture vaccine and hyperimmune serum,[1] using the dosage recommended on the label, provided worthwhile protection against percutaneous challenge up to and through the average marketable age of 5 to 7 months. However, the results of this experiment also showed that there was an inconsistency in the receptiveness and/or immunizing response to vaccination on an individual as well as a litter basis. While no factual explanation could be offered for this inconsistency, the idea seemed reasonable that certain pigs were able to resist the infective potential of the live culture vaccine and were aided in this by the simultaneous administration of immune serum.

European authors, according to Van Es,[2] have pointed out that the quantity of culture and serum should be as nearly balanced as possible and suggested using a minimum dose of serum to a given quantity of culture within the range of safety. Van Es *et al.*,[3] working with pigeons, were able to demonstrate that survivors from an initial test, which had been injected with the smaller doses of hyperimmune serums, proved to be more resistant to a second injection of culture than pigeons which had received the greater doses of serums under test.

Referring to the dosage of serum, Van Es[2] states that "Nocard and Leclainche recommend 10 cc. for pigs weighing less than 100 pounds and from 10 to 20 cc. for swine more than 100 pounds. Glässer estimates that 1 cc. for every 20 pounds of body weight is quite sufficient. The dose of virulent culture, when used in simultaneous vaccination, is 0.25 cc. for pigs of less than 100 pounds and from 0.5 to 1.0 cc. for animals over that weight, with 0.5 cc. as the usual routine dose." The method of Lorenz, according to Hutyra, Marek, and Manninger,[4] called for about 1.0 cc. of serum for every 22 lb. of body weight, with 0.25 to 1.0 cc. of culture according to the age of the animal, "with very high valent serum 2 cc. is sufficient for animals less than 110 pounds in weight, and 4 cc. for heavier animals." If we express these dosages in ratio of culture to serum for a pig weighing 50 lb., Nocard and Laclainche would have used a ratio of 1:40, Glässer's would have been 1:10, and Lorenz's would have been approximately 1:8. At the present time, the recommended prophylactic dosage for swine is 0.25 cc. of culture per 5.0 cc. of serum which is a ratio of 1:20.[5]

Practitioners have reported using varying dosages of culture and serum. Aitken[6] states that, "some culture breaks occur (following the use of culture and serum). From the records available, there seems to be less when ½ cc. of culture is used than when ¼ cc. is used. I have never used less than 1/3 cc." Railsback[7] reported that, "between 1/3 and ¼ cc. of culture was used on baby pigs with 5 cc. of serum in ½ of the herds and 3 cc. of serum in the other ½ of the herds. Whether it was coincidence or not I don't know, but both the herds in which I had acute swine erysipelas were herds that had received 5 cc. of serum per pig." Railsback,[8] during a vaccination season, used "3 cc. of serum and 1/3 cc. of culture in 1-3 week old pigs, and 5 cc. of serum and ½ cc. of culture in 3-6 week old pigs." Helming[9] states "now we use ½ cc. of culture and 3 cc. of serum on pigs only 2-weeks-old." Quin[10] has recommended 0.25 cc. of culture and 4.0 cc. of serum when the pigs are 1 week old, which was to be followed by another 0.25 cc. of culture three to four weeks later.

In our experience, using either the government standard or commercially prepared hyperimmune serums in mice over 7 weeks of age, 0.2 cc. of serum injected subcutaneously has always provided complete protection against a simultaneous injection of 0.1 cc. of undiluted broth cultures of virulent *Erysipelothrix rhusiopathiae*. Where 0.1 cc. of serum was used, an occasional mouse was not protected. Expressed in ratio form of culture to serum, this would be 1:1 or 1:2. Thus, it would seem possible by analogy to narrow the ratio of culture to serum and possibly induce a more satisfactory immune response in swine.

Naturally, an approach of this kind would require consistency in the virulence of the culture as well as the potency of the serum. In this country, standard requirements

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The authors express their appreciation to Dr. C. A. Manthei for his helpfulness in the preparation of this manuscript.

have been developed for the production of these two products. This, plus the availability of the culture in desiccated form, constitute advantages in the uniformity of these biological products today that were not available previously.

The experimental dosage of 0.5 cc. of culture and 3.0 cc. of serum, a ratio of 1:6, used in the following experiment was arbitrarily selected. However, this dosage ratio is greater than that used with safety in mice, though considerably less than the presently recommended ratio of 1:20 in swine.

TABLE 1—Duration of Immunity of Vaccinated Weanling Pigs to Swine Erysipelas Infection

No. of pigs	Exposure months after vac.	Immunity		Susceptibility		Protected (%)*
		Comp.	Incomp.	Localized	Generalized	
4	1	4	0	0	0	100
5	2	5	0	0	0	100
4	3	4	0	0	0	100
4	4	4	0	0	0	100
5	5	2	2	1	0	80
5	6	1	0	4	0	20
5	7	3	1	1	0	80

*Complete + incomplete immunes = protection.

MATERIALS AND METHODS

Eight bred sows were obtained from the nutrition herd of the Animal and Poultry Husbandry Research Branch, Beltsville, Md. These were crossbred sows with a predominance of Landrace and Chester White breeding. Vaccination for swine erysipelas had never been practiced in this herd; however, circumstantial evidence indicated that the disease, while limited, is present in a subclinical form. These 8 sows were placed together in a hoglot at the Animal Disease Station until approximately two weeks before farrowing. Each sow was then placed in an individual farrowing pen in a barn.

The first two litters were selected for another experiment; however, the status of their dams to percutaneous infection has been included along with the status of the remaining 6 sows to complete the background history of this experiment. The next four litters were farrowed within five days and a total of 35 pigs was weaned. At this time, they were divided into five lots of 7 pigs each, with each of the four litters represented in each lot. The last two litters, consisting of 18 pigs at weaning time, were divided into three lots of 6 pigs each and both litters were represented in each of these lots. Altogether, there was a total of 53 pigs divided into eight lots. One sow died from what appeared to be heat exhaustion a few days after being returned to a hoglot after weaning her litter.

TABLE 2—Comparison of Results of Percutaneous Exposure of Vaccinated and Nonvaccinated Weanling Pigs

		Immunity		Susceptibility	
		Comp.	Incomp.	Localized	Generalized
Vaccinated	Number	23	3	6	0
	Per cent	71.88	9.37	18.75	0
Nonvaccinated	Number	1	0	1	12
	Per cent	7.14	0	7.14	85.72

One serial lot each of commercial desiccated live culture vaccine and hyperimmune serum was used and standard government tests on the serial lots showed them to be satisfactory for release. As a matter of interest, these two serial lots of culture and serum were also used in the experimental evaluation of culture and serum vaccination of weanling pigs[3] and gilts[11] before breeding. All animals were on a basic ration containing an antibiotic (aurofac) at the rate of 6 lb. per ton of feed. Since the pigs were on concrete floors for the duration of the experiment, they were given reduced iron tablets shortly after birth and again at weaning time.

Vaccination of the pigs was carried out at weaning time; this varied from fifty-six to sixty-one days after birth. They were healthy, normal-appearing pigs weighing between 30 to 45 lb. The simultaneous injections of culture and serum were made subcutaneously in the axillary spaces. All vaccinated pigs received the same individual dosage of 0.5 cc. of culture and 3.0 cc. of serum. Two pigs were left unvaccinated in each lot to serve as contact, as well as subsequent exposure controls. From the standpoint of demonstrating litter susceptibility, the six litters used in this experiment were represented by 1 or more of the pigs left unvaccinated. A total of 37 pigs was vaccinated, with 16 left unvaccinated. Inasmuch as lot 8 was later eliminated from the experiment due to the immunity of the 2 unvaccinated pigs in this lot, which will be discussed later, the final results were based on 32 vaccinated and 14 unvaccinated pigs.

Demonstration of either immunity and/or susceptibility was based on the percutaneous or skin-scarification method of exposure to swine erysipelas infection.[12,13] The four lyophilized strains of *Ery. rhusiopathiae*, S192, HC585, 422-1, and NF4, were again used and the interpretation of the cutaneous reactions were the same as outlined in preceding papers on the experimental evaluation of culture and serum vaccination.[3,13,14]

The dams of these litters, with the exception of the 1 that died, were tested for immunity and/or susceptibility as a group shortly after the weaning of the last two litters by the same method of exposure.

The duration of immunity was determined by exposing one of the lots of pigs each month after vaccination. Thus, seven lots of pigs were exposed from one to seven months after vaccination. Since the pigs were approximately 2 months old at the

time of vaccination, their ages ranged from 3 to 9 months at time of exposure.

RESULTS

Vaccinated pigs exposed to percutaneous infection demonstrated 100 per cent protection from thirty-three days (1 month) up to and including 124 days (4 months) after vaccination; 80 per cent were showing protection at 153 days (5 months); 20 per cent at 181 days (6 months); and 80 per cent were again showing protection at 210 days (7 months) (*see* table 1). Of the 14 pigs left unvaccinated, 92.86 per cent were susceptible to percutaneous exposure (table 2). Two of the 7 sows tested were completely immune to percutaneous exposure, 1 of which farrowed a litter used in this experiment. The remaining 5 sows were susceptible, with 1 being localized and the other 4 showing generalized reactions (table 3).

One thing in marked contrast with our previous experience was the absence of variations of the cutaneous reactions to the four exposure strains on an individual basis, from the first to and including, the fourth month after vaccination. Although there seemed to be a lessening of protection in the pigs exposed five months after vaccination, as evidenced by 2 pigs being incompletely immune and 1 pig susceptible with localized reactions, the only variation pre-

TABLE 3—Response of Nonvaccinated Sows and Their Vaccinated Weanling Pigs to Percutaneous Exposure

Sow (No.)	Sow status	Date farrowed	Date weaned	Date vaccinated	Age at vaccination	Pig (No.)	Exposure		Strains of Ery. rhusiopathiae				Final status
							Date	Days after vaccination	S192	HC585	422-1	NF4	
331	S(G)	4/12/53	6/10/53	6/10/53	59 days	5	8/11/53	62	I	I	I	I	I
					Not vac.	6	8/11/53	—	I	I	I	I	I
					59 days	1	11/10/53	153	I	I	I	I	I
					59 days	10	11/10/53	153	II	II	II	II	II
					59 days	3	12/ 8/53	181	I	I	I	I	I
					Not vac.	9	12/ 8/53	—	S	S	S	S	S(G)
					59 days	2	1/ 6/54	210	I	I	I	I	I
					59 days	4	1/ 6/54	210	I	I	I	I	I
328	I	4/10/53	6/10/53	6/10/53	61 days	34	8/11/53	62	I	I	I	I	I
					Not vac.	33	8/11/53	—	S	S	S	S	S(G)
					61 days	32	11/10/53	153	I	I	I	I	I
					61 days	36	11/10/53	153	S	S	S	S	S(L)
					61 days	38	12/ 8/53	181	S	S	S	S	S(L)
					61 days	40	12/ 8/53	181	S	S	S	S	S(L)
					61 days	35	12/ 8/53	181	II	S	S	S	S(L)
					61 days	31	1/ 6/54	210	S	S	S	S	S(L)
					61 days	31-S	1/ 6/54	210	I	I	I	I	I
330	S(G)	4/14/53	6/10/53	6/10/53	57 days	41	8/11/53	62	I	I	I	I	I
					57 days	49	8/11/53	62	I	I	I	I	I
					Not vac.	46	11/10/53	—	S	S	S	II	S(G)
					Not vac.	47	11/10/53	—	S	S	S	S	S(G)
					57 days	42	12/ 8/53	181	S	II	II	S	S(L)
					57 days	50	1/ 6/54	210	II	II	II	II	II
					Not vac.	48	1/ 6/54	—	S	S	S	S	S(G)
329	S(G)	4/15/53	6/10/53	6/10/53	56 days	56	8/11/53	62	I	I	I	I	I
					56 days	51	11/10/53	153	I	II	II	II	II
					Not vac.	54	12/ 8/53	—	S	S	S	S	S(G)
					Not vac.	55	1/ 6/54	—	S	S	S	S	S(G)
335	No test (died)	4/23/53	6/18/53	6/18/53	57 days	70	7/21/53	33	I	I	I	I	I
					Not vac.	65	7/21/53	—	S	S	S	S	S(G)
					Not vac.	68	7/21/53	—	S	S	S	S	S(G)
					57 days	61	9/22/53	96	I	I	I	I	I
					57 days	64	9/22/53	96	I	I	I	I	I
					57 days	66	9/22/53	96	I	I	I	I	I
					57 days	63	10/20/53	124	I	I	I	I	I
					57 days	69	10/20/53	124	I	I	I	I	I
					Not vac.	62	10/20/53	—	S	S	S	S	S(G)
					Not vac.	67	10/20/53	—	S	S	S	S	S(G)
334	S(L)	4/24/53	6/18/53	6/18/53	56 days	74	7/21/53	33	I	I	I	I	I
					56 days	76	7/21/53	33	I	I	I	I	I
					56 days	77	7/21/53	33	I	I	I	I	I
					56 days	73	9/22/53	96	I	I	I	I	I
					Not vac.	71	9/22/53	—	S	S	S	S	S(L)
					Not vac.	75	9/22/53	—	S	S	S	S	S(G)
					56 days	72	10/20/53	124	I	I	I	I	I
					56 days	79	10/20/53	124	I	I	I	I	I

I = complete immune; II = incomplete immune; S = susceptible; S(L) = susceptible, local reaction; S(G) = susceptible, generalized reaction.

sented was by pig 51. At six months after vaccination, only pigs 35 and 42 (table 4) showed the type of variation to the four exposure strains that was previously experienced.[1] No variations, however, occurred in the lot of pigs exposed seven months after vaccination.

Vaccinated pigs 35, 38, 40, and 42, in lot 6 showed only localized reactions when exposed five months after vaccination. This was also true of pig 36 in lot 5 and pig 31 in lot 7. These pigs were litter mates, with the exception of pig 42. The fact that the cutaneous reactions remained localized and did not become generalized does provide evidence that some degree of protection was present in these pigs. For a comparison of the results of the percutaneous exposure of vaccinated and nonvaccinated weanling pigs, see table 2.

One of the contact and/or exposure controls in lot 2 was immune to percutaneous exposure. This indicated that the immunity was derived from a subclinical infection which probably originated with organisms shed from 1 or more of the vaccinated animals in this lot of pigs. If this was the case, it can not be clearly stated that the complete immune status of the vaccinated pigs in lot 2 was entirely the result of vaccina-

TABLE 4—Response of Vaccinated Weanling Pigs to Percutaneous Exposure

Lot (No.)	Pig (No.)	Date vaccinated	Exposure: Date	Exposure: Days after vaccination	Strains of Ery. rhusiopathiae: S192	HC585	422-1	NF4	Final status	Remarks
1	70	6/18/53	7/21/53	33	I	I	I	I	I	
	74	6/18/53	7/21/53	33	I	I	I	I	I	
	76	6/18/53	7/21/53	33	I	I	I	I	I	
	77	6/18/53	7/21/53	33	I	I	I	I	I	
	68	Not vac.	7/21/53	....	S	S	S	S	S(G)	
	65	Not vac.	7/21/53	....	S	S	S	S	S(G)	
2	5	6/10/53	8/11/53	62	I	I	I	I	I	
	34	6/10/53	8/11/53	62	I	I	I	I	I	
	41	6/10/53	8/11/53	62	I	I	I	I	I	
	49	6/10/53	8/11/53	62	I	I	I	I	I	
	56	6/10/53	8/11/53	62	I	I	I	I	I	The other nonvaccinated pig in the same litter was S(G) (see pig 9).
	6	Not vac.	8/11/53	....	I	I	I	I	I	
	33	Not vac.	8/11/53	....	S	S	S	S	S(G)	
3	61	6/18/53	9/22/53	96	I	I	I	I	I	
	64	6/18/53	9/22/53	96	I	I	I	I	I	
	66	6/18/53	9/22/53	96	I	I	I	I	I	
	73	6/18/53	9/22/53	96	I	I	I	I	I	
	71	Not vac.	9/22/53	....	S	S	S	S	S(L)	
	75	Not vac.	9/22/53	....	S	S	S	S	S(G)	
4	63	6/18/53	10/20/53	124	I	I	I	I	I	
	69	6/18/53	10/20/53	124	I	I	I	I	I	HC585 & NF4 slight reaction 2nd day only.
	72	6/18/53	10/20/53	124	I	I	I	I	I	
	79	6/18/53	10/20/53	124	I	I	I	I	I	HC585, 422-1, NF4 slight reaction 1st day only.
	67	Not vac.	10/20/53	....	S	S	S	S	S(G)	
	62	Not vac.	10/20/53	....	S	S	S	S	S(G)	
5	1	6/10/53	11/10/53	153	I	I	I	I	I	
	10	6/10/53	11/10/53	153	II	II	II	II	II	
	32	6/10/53	11/10/53	153	I	I	I	I	I	
	36	6/10/53	11/10/53	153	S	S	S	S	S(L)	
	51	6/10/53	11/10/53	153	I	II	II	II	II	
	46	Not vac.	11/10/53	....	S	S	S	S	S(G)	
	47	Not vac.	11/10/53	....	S	S	S	S	S(G)	
6	3	6/10/53	12/ 8/53	181	I	I	I	I	I	
	35	6/10/53	12/ 8/53	181	II	S	S	S	S(L)	
	38	6/10/53	12/ 8/53	181	S	S	S	S	S(L)	
	40	6/10/53	12/ 8/53	181	S	S	S	S	S(L)	
	42	6/10/53	12/ 8/53	181	S	II	II	S	S(L)	S192 late S.
	9	Not vac.	12/ 8/53	....	S	S	S	S	S(G)	
	54	Not vac.	12/ 8/53	....	S	S	S	S	S(G)	
7	2	6/10/53	1/ 6/54	210	I	I	I	I	I	
	4	6/10/53	1/ 6/54	210	I	I	I	I	I	
	31	6/10/53	1/ 6/54	210	S	S	S	S	S(L)	
	31-S	6/10/53	1/ 6/54	210	I	I	I	I	I	
	50	6/10/53	1/ 6/54	210	II	II	II	II	II	
	48	Not vac.	1/ 6/54	....	S	S	S	S	S(G)	
	55	Not vac.	1/ 6/54	....	S	S	S	S	S(G)	

I = complete immune; II = incomplete immune; S = susceptible; S(L) = susceptible, local reaction; S(G) = susceptible, generalized reaction.

tion. Nevertheless, lot 2 was retained in the experiment since the other control was susceptible. Furthermore, the vaccinated pigs in the succeeding lots 3 and 4 were also completely immune while their controls were susceptible.

It was hoped that by extending this experiment longer than the original anticipated duration of immunity, a point would be reached when all the vaccinated pigs would not only be susceptible but a high percentage would show generalized infection. However, this was not the case. In addition, while the vaccinated pigs of lot 8 exposed 251 days (8 months) after vaccination were completely immune, the lot had to be eliminated from the series since both unvaccinated contact and/or exposure controls were completely immune. This demonstrates again the probability of subclinical infection originating from organisms shed by the vaccinated animals.

DISCUSSION

The results, following the use of a culture-serum dosage of 0.5 cc. to 3.0 cc., a ratio of 1:6, were surprisingly good. Not only was there a gratifying duration of immunity induced, which persisted five months after vaccination but during this time, there was also a marked absence of variation in cutaneous reactions to the four exposure strains on an individual pig basis. This would also indicate that the degree of immunity induced in these weanling pigs with a dosage ratio of 1:6 was not only greater but more consistent than when a dosage ratio of 1:20 was used.[1] In other words, despite the one irregularity in lot 2, wherein 1 of the nonvaccinated pigs was immune, a narrowed ratio between culture and serum resulted in a much more satisfactory immune response.

Several factors probably entered into creating a more satisfactory immune response besides the mere fact that the culture-serum ratio was narrowed from 1:20 to 1:6. The dosage of culture used in this experiment was 0.5 cc., two times the recommended dose of 0.25 cc./50-lb. pig or under. The reduction in the amount of serum administered was 2 cc. or almost one-half the recommended dose of 5.0 cc. Therefore, it would be impossible to say specifically if either the decrease in serum or the increase in culture caused the more satisfactory immune response. To ascertain this point, a constant would have to be maintained using either 0.25 cc. of culture on the one hand against a varying serum dosage, or 5.0 cc. of serum against a varying culture dosage.

The results were reviewed on a litter basis in an effort to account for the 20 per cent protection demonstrated at six months and a return to 80 per cent at seven months after vaccination. A cursory examination of the final status of the vaccinated pigs by litters (table 3) showed that those farrowed by sow 328, which was immune to percutaneous exposure, also contained all the susceptible pigs, with one exception. This would tend to indicate that the immune status of the sow had some influence on the effect of weanling pig vaccination. However, when the final status of the pigs in lot 5 (2 from sow 331, 2 from sow 328, and 1 from sow 329) were compared, there was not enough difference in their immunity to support such a conclusion. This situation was also true for lot 7. There was an unequal distribution of vaccinated pigs on a litter basis in lot 6, so that a fair comparison of the final status of these pigs could not be made.

The fact that there were 2 pigs completely immune, 2 incompletely immune, and only 1 susceptible pig showing local reactions in lot 5, already suggested the previously made observation of an apparent lessening of protection five months after vaccination. If this were so, then it would be natural to expect the pigs of lot 6 to show evidence of less immunity than lot 5. This was demonstrated by the results of exposure. We do know, however, that a litter from an immune sow can present a variable picture of resistance within the litter to percutaneous infection at 58 days of age.[11] Therefore, it seems logical to also expect a variability in the immune response within a litter when vaccinated as weanlings.

Instead of the culture stimulating a booster effect, it is postulated that resistant pigs tend to reduce the immune potential of the culture introduced through vaccination. This is offered as a possible explanation for the 20 per cent protection demonstrated at six months in lot 6. Nevertheless, the 80 per cent protection demonstrated in pigs from both susceptible and immune dams represented in lot 7 would indicate that it is possible to induce an immunity

which would persist for seven months after vaccination.

The presence of only localized cutaneous infection in the 6 susceptible vaccinated pigs, as compared with 12 out of 14 of the nonvaccinated ones that showed generalization, serves to point out again that a localized cutaneous reaction is indicative of some degree of resistance or protection.[1,15]

To illustrate more graphically the degree of immunity present five months after vaccination, 8 nonvaccinated mature hogs in another experiment were exposed to percutaneous infection on the same day, using the same exposure cultures that were used on the pigs of lot 5. In this instance, 5 of the 8 mature hogs died of acute swine erysipelas.

No clinical manifestations were observed following the vaccination of the weanling pigs in this experiment. Nevertheless, the possibility of "vaccination erysipelas" must be considered until a large number of swine have been vaccinated safely with the ratio of culture to serum used in this experiment. Therefore, before recommending any dosage change, it would require substantial evidence of safety which can only be obtained from field use.

SUMMARY

Weanling pigs were vaccinated experimentally with 0.5 cc. of commercial desiccated vaccine and 3.0 cc. of hyperimmune serum, a ratio of 1:6. These pigs were then tested at monthly intervals for immunity and/or susceptibility by the percutaneous or skin-scarification method of exposure. Protection was demonstrated in 100 per cent of the pigs from one through four months after vaccination; 80 per cent were protected at five months; 20 per cent at six months; and 80 per cent at seven months after vaccination. Since these pigs were vaccinated as weanlings, these results showed a gratifying duration of immunity through the average five- to seven-month marketable age.

Although there was a marked decrease in the degree of protection in the lot of pigs tested six months after vaccination (20%), the lot of pigs tested at seven months showed good protection (80%). A possible explanation for this has been presented, postulating that resistant weanling pigs tend to reduce the immune potential of culture-serum vaccination.

Following the use of 0.5 cc. of culture and 3.0 cc. of serum, a ratio of 1:6, there was a marked absence of variations in the cutaneous reactions to the four exposure strains on an individual pig basis. These results indicate that the degree of immunity induced by vaccinating these weanling pigs with a culture-serum ratio of 1:6 was greater than when a ratio of 1:20 was used in a previous experiment.[1]

While no clinical manifestations were observed following vaccination of the pigs in this experiment, substantial evidence of safety would be required before a dosage change could be recommended.

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Eosinophilic Myositis in a Dog

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A recent report of eosinophilic myositis by Winter and Stephenson[1] gives an excellent review of the available literature on this subject and emphasizes that the etiology and therapy of the disease is unknown and the prognosis grave.

This successfully treated case of eosinophilic myositis is being reported with the hope that it will contribute to the understanding and knowledge of this disease.

In March, 1952, a 2-year-old male German Shepherd was presented with bilateral tonsillitis and firm swellings of the temporal muscles. Its temperature was 104 F. A postorbital abscess was suspected and the swellings were lanced, with negative results. The condition was diagnosed simply as myositis. Aureomycin, 250 mg. every four hours for four days, produced no clinical improvement except for a slight decrease in temperature. The dog was then referred to the University of Pennsylvania veterinary hospital where radiographs of the head revealed no skeletal abnormalities. The diagnosis of myositis was confirmed. The dog gradually returned to normal health, the muscle swellings subsiding.

In November, 1952, the dog had a recurrent attack of myositis of the muscles of mastication. He had a temperature of 103.5 F., was depressed, and stood with his head down. The muscles of mastication were hard, presenting a rounded, swollen appearance. Some exophthalmos was present. The owner reported that the dog ate with difficulty. He was given terramycin® but was not hospitalized. When examined three days later, there was no visible clinical improvement. The dog was unable to eat and was becoming more depressed. Eosinophilic myositis was suspected. A blood analysis showed the following:

r.b.c.	6,870,000
w.b.c.	19,300
Hb.	15.0
Eosinophils	22.5%

This confirmed the tentative diagnosis of eosinophilic myositis. Since the disease is characterized by a high eosinophil count, and since cortisone causes the disappearance of eosinophils from the circulating blood, it was decided to give the dog an intramuscular injection of 50 mg. of cortisone.

Twenty-four hours after the initial injection, the owner reported a softening of the muscles of mastication and a general improvement in the dog's physical condition. Two days later, the dog was again examined and an intramuscular injection of 50 mg. of cortisone was given. It was placed on an oral maintenance dose of 25 mg. of cortisone three times daily for three days, then 25 mg. twice daily for three days, and then 25 mg. every twenty-four hours for a week. When examined after one week of this therapy, a slight atrophy of the temporal muscle was noticed, but the dog was markedly improved and had a normal appetite. At this time, the blood count showed:

r.b.c.	6,770,000
w.b.c.	15,600
Hb.	15.0
Eosinophils	16.0%

Another blood analysis at the completion of cortisone therapy revealed the following:

r.b.c.	6,810,000
w.b.c.	15,300
Hb.	15.0
Eosinophils	13.0%

Discussion and Conclusions.—This seems to be the first recorded case of eosinophilic myositis wherein therapeutic measures resulted in a dramatic clinical improvement, accompanied by a marked reduction of circulating eosinophils. The improvement was too marked to be confused with the gradual recession of symptoms normally observed in this disease. There has been no recurrence of symptoms and the dog is in normal health.

The etiology of this disease is still unknown, but this successful use of cortisone lends credence to the belief that the myositis is a manifestation of an allergic phenomenon. Since antihistamines reportedly are not effective in treating this disease, there may be some other cause. McGrath[2] derived no significant information from neuropathological studies of cases similar to this. It is possible that the beneficial effects of cortisone are due solely to its effect on eosinophils rather than any antiallergic action.

Drs. Moon and Wood are general practitioners in Trenton, N. J.

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Designated Drought Counties

On Aug. 5, 1954, the U.S.D.A. designated 180 counties in six states as eligible, because of drought, for subsidies on certain grains and feeds held by the Commodity Credit Corporation. Included were 76 counties in Missouri, most of the state except for the north two tiers of counties and the southeast corner below St. Louis; 23 counties in Colorado, most of the eastern half of the state; 24 in New Mexico; 26 in Oklahoma; 23 in Texas; and 8 counties in Wyoming. Studies were being made of conditions in 9 other southeastern states including southern Illinois but not including Mississippi or Florida.

Is This a Record Age for Milk Production?

A Holstein-Friesian cow at Parlier, Calif., is still functioning as a wet nurse for "vealer" calves at 28 years of age—an estimated equivalent of 168 years in man. She has been milking continuously since last bred at the age of 21.—*Country Gentlemen, August, 1954.*

Bovine Infectious Ophthalmia

Hemophilus bovis was isolated from the conjunctival sac of affected cattle in various parts of Australia. When the organism was inoculated into the conjunctival sac, it produced typical ophthalmia in 3 of 4 susceptible cattle and, although not showing symptoms, the organism was later recovered from the nasal passages of the fourth. The incubation period was two to three days; the duration of the disease before regression commenced was twenty-one to twenty-seven days. Ocular and nasal exudate of the affected cattle was heavily charged with *H. bovis*, and 110 and 139 days after infection, long after clinical signs had subsided, the organism was still recovered. As therapy, a 1 per cent chloromycetin® ointment was effective in the early stages and somewhat beneficial in advanced cases.—*Austral. Vet. J., March, 1954.*

Bovine Pyelonephritis

A 7-year-old cow, which had been given a course of penicillin for a similar condition six weeks previously, was found to have pyelonephritis in her left kidney, and *Corynebacterium renale* were cultured from her urine. On five alternate days she was given, intramuscularly, 3 million units of penicillin in oil. The last two doses were given after her port wine-colored urine had become normal. She seemed to recover fully. —*Iowa State College Vet., No. 3, 1954.*

Injectable Insecticides for Cattle

Phosphorous insecticides to be fed to, or injected into, cattle with the hope they will be effective against lice and other insects, but particularly against "warble" larvae before they migrate to the backs of animals, are being tested at Kerryville, Texas. Whether they will accumulate in the meat or milk has not been determined.—*U.S.D.A., July 20, 1954.*

Pleuropneumonia-like Organisms from Bovine Bronchopneumonia

Bacterial examination of lung tissues from 24 calves, 4 to 12 months old, with a bronchopneumonia typical of shipping fever, by Dr. G. R. Carter, at the Ontario Veterinary College, produced pleuropneumonia-like organisms. The difficulty of their isolation suggests that they are parasitic. The isolation is deemed important if only because of their resemblance to the etiological organisms in contagious pleuropneumonia.—*Science, July 16, 1954.*

Iodized Mineral Oil in Mastitis.—The prestige of antibiotic therapy has overshadowed the effectiveness of iodized mineral oil in mastitis, as reported by Sanders (*Am. J. Vet. Res.*, Oct., 1941: 407). When 131 quarters in 55 cows, several of which had been treated with penicillin or other agents previously, were injected with 100 to 300 ml. of a 1:1,250 dilution of iodine in a light mineral oil, satisfactory recoveries occurred in all but 14, most of which were *Staphylococcus pyogenes* infections.—*Brit. Vet. J., May, 1954.*

Two Fatalities Due to Whipworms in the Dog

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A RECENT REVIEW of veterinary literature by Rubin[1] reported only 1 recorded fatal case of trichuriasis in the dog. It appears, therefore, of value to report 2 additional cases received for treatment at Angell Memorial Animal Hospital in which massive whipworm infections were considered to be the cause of death.

Case 1.—A 3-year-old Malemute bitch was presented on March 22, 1954, with a history of diarrhea of two week's duration. At the onset of illness, blood flecks were said to have been present in the stools. The owner reported a remarkable loss of weight, and for three days prior to admission the animal had displayed marked polydipsia and polyuria. The owner, a physician, had been treating the diarrhea with sulfonamides with no success. The dog was 1 of 30 in a sled dog pack and it had not been isolated during the illness. None of the other animals, including 2 dogs caged with the patient, were reported to be showing clinical symptoms.

On admission, the animal had a temperature of 102.4 F. The oral and vaginal mucosae were pale. Abdominal palpation was negative. The patient was dyspneic, depressed, and ascultation showed increased lung sounds. The stools were watery and blood-tinged. A tentative diagnosis of pancreatic disease was made and conservative treatment was begun. The following laboratory data were obtained:

w.b.c.	26,800
Hematocrit	41
Hemoglobin	13.8 Gm. per 100 cc.
Blood urea nitrogen	22.5 mg. per 100 cc.
Blood sugar	110.4 mg. per 100 cc.

Sedimentation rate (Wintrobe tube) – 11 mm. in thirty minutes; 37 mm. in sixty minutes

Fecal examination showed whipworm ova. The animal's death occurred twenty-two hours after admission.

At necropsy, the mucous membranes were pale, the eyes were deeply sunken, and the body thin and dehydrated. The tail was smeared with foul-smelling feces. The viscera were pale, the liver slightly swollen, yellowish red, and showing a distinct lobular pattern. The animal was so dehydrated that the serous surfaces of the viscera tended to adhere to each other as if glued together. The intestines were distended with gas. About a dozen hookworms were found in the jejunum. The distal ileum contained a mucoid exudate and the intestinal mucosa became increasingly injected as the colon was approached.

The subserous vessels of the cecum and colon were injected. Upon opening these organs, their mucous surfaces were found to be covered with a mat of Trichuris which extended into the rectum to within 2 cm. of the anus. The feces in the colon were fluid and bloody. The mucous membranes of the cecum and first 6 cm. of the colon were ulcerated and the wall of the colon was thickened to about 5 mm. even though the organ was considerably distended. The mesenteric lymph nodes were swollen and moist and contained a few petechial hemorrhages.

Death was believed to be due to the affects of diarrhea and dehydration produced by the parasitic typhlitis, and colitis which resulted from gross *Trichuris vulpis* infection.

Case 2.—A 6-year-old female Terrier-type mongrel was presented Sept. 26, 1953, with a history of diarrhea of more than two week's duration, with occasional blood in the feces. There had been occasional vomiting of yellow fluid. The animal had never been in a boarding kennel and rarely left its owner's yard. On entry, the mucous membranes were pale and the patient was thin and dehydrated. A direct fecal smear indicated heavy whipworm infection.

Treatment consisted of supportive fluid therapy and the administration of 5 cc. of normal butyl chloride followed in thirty minutes by 2 drams of milk of magnesia. Before death, sixteen hours after entry, the patient had spells of vomiting and lay in the cage with its head hanging over the water dish.

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At necropsy, the mucosae and viscera were pale. Otherwise, no significant lesions were found until the gastrointestinal tract was examined. The stomach and areas in the jejunum were injected. A light tapeworm infection existed in the small intestine. The cecum and entire length of the colon were covered with Trichuris, and death was considered to be due to the sequelae of this infection.

Discussion.—These cases demonstrate that trichuriasis, along with other diarrhea-producing conditions such as ancylostomiasis, coccidiosis, and foreign material in the intestine, must be considered as possible causes of death in the dog. Of interest is the fact that 1 patient, a house pet, had led an isolated existence and still developed a massive whipworm infection. The other patient, a kennel dog, was the only 1 of 30 to develop clinical symptoms. Examination of this dog's 2 cage mates about sixty days after admission showed that 1 had a light ancylostomiasis; the other a moderate ancylostomiasis and trichuriasis.

These observations lead one to believe that a deficient immune response may predispose certain individuals to gradual development of massive infection when continually exposed to viable larvae.

Whitney and Whitney[2] recently suggested a new technique of treating trichuriasis. They administered normal butyl chloride in the usual ascarid-hookworm dosage once every hour to a total of five doses. No cathartic was administered. This method, with a purgative following, has been used in several cases by staff members of the Angell Memorial Animal Hospital with results indicating that it has merit. This technique minimizes the problem of vomition which often occurs following a single large dose of the chlorinated hydrocarbon.

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Cougar Has Osteogenesis Imperfecta.—An 8-month-old female mountain lion from a zoo is a patient at the Colorado A. & M. veterinary hospital where her congenital bone disease is being studied. The entire litter of which she was a member was affected with weak, fragile bones. The patient has difficulty in maintaining her balance.—*Fort Collins Coloradoan, April 27, 1954.*

A Swine Influenza Antiviral Agent

A substance which was effective, to a variable degree, against swine influenza in mice was recovered from a culture of the mold, *Penicillium funiculosum*, which had been developed by R. E. Shope, M.D., after he found it on Guam in 1945. This substance gradually lost its potency in two years but a second substance, helenine, from the same source, continues to have therapeutic value against two other virus diseases in mice. Helenine apparently either inhibits the multiplication of the virus or interferes with its neuroinvasiveness.—*J. Exptl. Med., 97, May 1, 1953.*

Erysipelas Infection in Chickens

Two cases in which *Erysipelothrix rhusiopathiae* infection occurred in flocks of chickens, a rare condition in this country, are reported in *The Cornell Veterinarian* (Jan., 1954). In one flock of 900, 5 or 6 apparently healthy birds died suddenly each week. In the other flock of 400 birds, production dropped drastically and 100 died in three weeks. There was no evident source of infection in the first flock but 2 pigs, purchased at public sale, had been placed with the second flock about the time losses commenced. When the pigs were slaughtered, no pathogenic organisms were isolated. Some birds from each flock revealed, on necropsy, enlarged spleens and liver lesions, and *Ery. rhusiopathiae* were isolated from many specimens. An infection on the hand, typical of erysipeloid, developed in one person from contact with each flock.

Erysipelas Not Eradicable

Although *Erysipelothrix rhusiopathiae* infection is most commonly associated with swine, Dr. S. H. McNutt, University of Wisconsin, emphasizes that it occurs also in man, sheep, cattle, mice, and many, if not all, birds, being found in turkeys, pigeons, chickens, geese, ducks, mud hens, pheasants, parrots, and quail. Because of its wide host range, it appears to be one disease that can not be eradicated.—*Haver-Glover Messenger, July-August, 1954.*

Rabies Control in Alberta

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THE MAIN PURPOSE of this paper is to outline the rabies control measures in wildlife adopted in Alberta, Canada, from June, 1952, to March 1, 1954. Other control measures will also be mentioned to give readers the over-all picture.

HISTORY

This history does not cover all the cases but is sufficient to outline the rate of spread of rabies as determined by the positive cases submitted. At best, it is only relatively accurate. The first case was reported at Fort Fitzgerald (map 1, A) on June 8, 1952, when a wild red fox entered the village and bit 4 dogs, 3 of which developed rabies in twelve to fourteen days. On June 26, another fox came out of the bush at the junction of the Slave and Peace rivers (B)* and bit a dog. On July 9, a wolf bit several hogs in the Fort Vermilion (C) district. In October, the disease was known to be present in the Keg River (D) area. On the west side of the province, rabies was diagnosed in foxes in the Peace River farming block (E) by late December, while on the east side a rabid coyote was submitted from Fort McMurray (F) on November 7, and a fox from Margie (G) on November 28. In January, 1953, positive cases involving wildlife had occurred in the Lac La Biche (H), Morinville (I), Whitecourt (J), and Grande Prairie (K) districts. In February, heads from rabid animals were submitted from the Wetaskiwin (L) and Lethbridge (M) districts. In March, April, and May, rabies fill-in points included the Homeglen (N), Gleichen (O), Brooks (P), Provost (Q), Youngstown (R), and High River (S) districts. There were many other cases, but these are representative and illustrate the time element involved.

Most of the positive animals south of Edmonton in the farming areas were isolated cases, mainly involving coyotes and dogs. Just why these should be isolated is difficult to explain. It is also difficult to explain the incidence in the Lethbridge (M) district, while a vast area between there and Wetaskiwin (L) remained free of infected animals. Part of the explanation may be that most of central and southern Alberta is semiprairie or prairie without cover for a heavy concentration of wildlife. Also, a rabid coyote will no doubt travel long distances. In Montana, a healthy tagged coyote was found to have traveled 115 miles.[1]

Since the beginning of the outbreak, positive diagnoses have been made on the following animals: cattle, hogs, sheep, dogs, cats, a beaver, a bear, coyotes, foxes, wolves, lynx, a moose, a rabbit, and a weasel. The disease has been diagnosed clinically also in both wild and tame horses in the Fort Vermilion district, but due to the problem of shipping a head of that size 900 miles to the Federal Veterinary Research Laboratory at Lethbridge, none was submitted. From reports, mice and skunks may have been infected in isolated cases. A caribou from the North West Territories was also positive.

The main domestic livestock losses occurred in the fall and winter of 1952-1953 in the Fort Vermilion (C) and Keg River (D) districts which are small isolated farming areas surrounded by woods, approximately 650 air miles north of the United States boundary. Approximately 80 cattle, 150 hogs, and 25 horses died of the disease in these two centers. Rabid foxes were the main culprits, but many animals were bitten by rabid wolves. The period of incubation after fox bites was relatively short, averaging ten to fourteen days. In the fall and winter of 1953-1954, approximately 40 domestic animals died of rabies in the Athabasca, Peace River (B), Keg River (D) and Fort Vermilion (C) districts, principally in the first two places.

It is suspected that rabies had been present in wildlife in the North West Territories north of Alberta for many years. It was known as "Arctic dog disease" until Plummer,[2] in 1947, proved it was actually rabies caused by a wolf or fox bite. It has probably occurred in northern Alberta also, as LaFoy,[3] when trapping in the Keg River (D) district in 1928, saw many foxes with the same symptoms and many were found dead. The Alberta outbreak of 1952 no doubt originated in the North West Territories, spreading south with the migration of foxes. Two waves of foxes moved through the Fort Vermilion (C) area in 1952, the first in August and September, the second in November and December. Most of the livestock losses corresponded with these invasions. No cases occurred at Fort Vermilion during the summer of 1953, but 3 suspected cases were reported in November and 1 rabid fox attacked a trapper there in February, 1954.

The fall and winter of 1952-1953 saw the peak of the eight-year population cycle of the wild fox, especially west of the fifth meridian and in the North West Territory area north of Alberta. The peak fox population at Fort McMurray (F) occurred during the winter of 1950-1951. Fox fur

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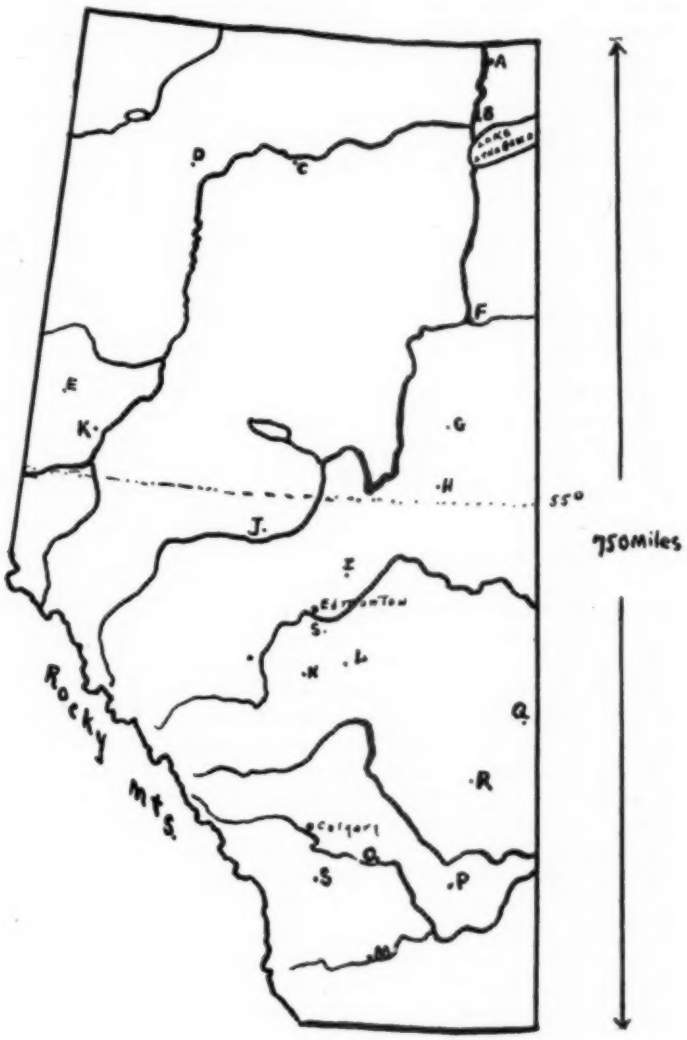
*The A, B, C locations are designated on map 1.

prices became so low that practically none had been trapped the past few years.

The information concerning the spread of rabies in the forested areas of northern Alberta (375 by 350 air miles) was obtained mainly through the provincial forest rangers, registered trappers, and Royal Canadian Mounted Police (R.C.M.P.). The 1,800 registered trappers in Alberta were warned by a letter from the authors, in September and October of 1952, that rabies was present; they were given information as to symptoms and personal protection, and their cooperation was requested in reporting suspicious cases to their closest forest ranger or R.C.M.P. detachment. The response was excellent, with many carcasses and heads being shipped in by plane or other means for examination.

No positive rabid animals have been found south of a line running east and west approximately 70 miles north of Edmonton (S) since June, 1953. Only 18 cases of rabies were officially diagnosed north of that line from September, 1953, to March 1, 1954; a marked contrast to the 92 cases officially diagnosed, plus the many additional clinically diagnosed domestic losses mentioned previously, throughout the whole province, from June, 1952, to September, 1953. The cases reported late in 1953 and early in 1954 were mainly associated with rabid coyotes.

A few facts about Alberta are pertinent to a full understanding of the control problem. The province is three times the size of the British Isles, or five times the size of New York State. Its north-south dimension is 750 air miles, slightly greater than the distance from New York City to Chicago. Half of its area is forest, mainly in the northern half and west along the Rockies; the remainder is farm land, varying from wooded and semiwooded country to bald prairies in the southeast. The population includes over 1,000,000 people, approx-



Map 1—Showing the spread of rabies in Alberta, beginning in June, 1952.

imately 1,800,000 cattle, 1,400,000 hogs, 250,000 horses, 340,000 sheep, and 10,000,000 poultry.

CONTROL MEASURES

CENTRAL RABIES CONTROL COMMITTEE

Due to the fact that both the federal and provincial governments were involved, through several departments of each, a committee was formed to advise on and coordinate the various activities. The committee had no legal power, but it is acknowledged to have performed a useful purpose. The federal government was represented by personnel from the Health of Animals Division of the Department of Agriculture, from the Department of Indian Affairs, and the R.C.M.P. The Alberta Government had representatives from the departments of agriculture, health, and lands and forests. Other members were a representative from the Alberta Veterinary Medical Association and the medical officer of health from the City of Edmonton. The Committee at first met every two weeks, later monthly, to review progress and discuss methods of improvement.

DOG QUARANTINE

As rabies is a reportable disease, under the Federal Animal Contagious Diseases Act, the federal government, through the Health of Animals Division, placed a quarantine on all dogs in the North at the start of the outbreak. As the disease spread southward, the quarantine area was correspondingly adjusted until on March 6, 1953, all dogs in Alberta were under quarantine (since repealed to the 53°). The R.C.M.P. were the main enforcement officers, assisted by inspectors of the Health of Animals Division.

To complement the federal quarantine order, and to provide more enforcement officers, the Alberta Government asked all cities, towns, villages, municipalities, and counties to pass bylaws requiring dogs to be tied up and to provide for the destruction of strays. The response was practically 100 per cent. In local improvement districts, the forest rangers and pest control officers aided the R.C.M.P. in enforcing the law. Hundreds of dogs were destroyed; many of these were strays, but some were dogs that the owners could not see suffer with confinement. In the City of Edmonton (pop. 200,000) over 1,200 dogs were destroyed during the 1952-1953 winter alone.

Several hundred people also paid fines for not obeying the federal quarantine or local bylaws, prosecutions being mainly under the latter.

On many of the Indian reservations, their councils passed bylaws limiting the number of dogs per owner to 2, unless more were required for sleds, and ordering the destruction of strays.

DOG VACCINATION

North of Fifty-Fifth Parallel.—The federal government, through the Health of Animals Division, vaccinated all dogs north of the fifty-fifth parallel. Their veterinary inspectors, assisted by the R.C.M.P. and provincial forest rangers in some remote northern districts, did the vaccinating. In farming areas north of the fifty-fifth parallel, provincial district agriculturists (same as county agents) and municipal authorities organized a vaccination program whereby all owners brought their dogs to central points for vaccinating. In this way, several thousand dogs were vaccinated in a short time. All the dogs (approximately 10,000) were vaccinated in the winter of 1952-1953 and revaccinated in the fall of 1953. In the remote northern settlements, they were vaccinated as soon as the outbreak occurred in June, 1952. At Keg River (D) and Fort Vermilion (C), the dogs were revaccinated in six months. No charge was made for these vaccinations.

South of Fifty-Fifth Parallel.—South of the fifty-fifth parallel, where vaccination was not compulsory, owners could have their local veterinarian vaccinate their dogs. This was not a free service. Vaccination clinics organized by municipal, town, or village authorities were held in many centers as a convenience to dog owners.

SPECIMEN CONTAINER DEPOTS

Submission of specimens is not exactly a control measure, but the transportation of specimens in a safe manner is a protection to those handling them, and the source of positive specimens indicates the spread of the disease, which aids in keeping control measures up to date. In the fall of 1952, the Alberta Department of Agriculture, through the Veterinary Services Branch, provided the provincial forest rangers with 5-gallon metal cans with seal-tight lids (fig. 1) for shipping heads of suspected rabid animals. The rangers were also supplied with heavy, acid-resistant rubber gloves, disinfectant, instructions on safely

decapitating wild animals, and history report forms. The specimens were forwarded to the veterinary laboratory, Alberta Department of Agriculture, Edmonton, for icing, etc., and then forwarded to the Federal Veterinary Research Laboratory at Lethbridge (M) where the official diagnosis was made. In some cases, the heads traveled over 900 miles—600 to get to Edmonton, then 325 to Lethbridge. This method of handling specimens proved so satisfactory that container depots were set up all over the province (map 2) at forest ranger stations, Federal Health of Animals Division subdistrict offices, with practicing veterinarians, or R.C.M.P. detachments. All were supplied with such equipment as heavy rubber gloves, disinfectant, and several cans. Through the educational program, people learned where these depots were and they were effectively used.

Educational Program

A good educational program is of utmost importance when dealing with any contagious and infectious disease, especially when the disease is transmissible to man. It is basic in getting control measures obeyed, in preventing human cases, in averting hysteria, and in correcting false ideas that abound during a disease outbreak.

As Albertans had not been exposed to rabies previously, an all-out educational program was undertaken. Meetings were arranged in many centers by the district agriculturists of the Alberta Department of Agriculture. A veterinarian, provincial, federal, or practicing, discussed rabies in animals, using slides which showed symptoms in a dog, cow, and horse to illustrate their talk. Whenever possible, the local medical officer or public health nurse discussed the public health aspects of the disease, but if neither could attend, the veterinarian outlined the human precautions as well, stressing the importance of reporting all bites and all suspected rabid animals, and of keeping suspected rabid dogs under observation for twelve to fourteen days. The forest ranger, pest control officer, or district agriculturist discussed the poisoning campaign for wildlife. Maps which showed the location of positive cases, container depots, the traplines, etc. were provided as visual aids. They were also supplied to all cooperating officials. The federal veterinarians, when on the vaccinating program, also furthered the educational work considerably.

Approximately 20,000 copies of a bulletin on rabies, prepared by the Central Rabies Control Committee and paid for by the Alberta Department of Agriculture, were distributed throughout the province. Extensive use of the bulletin was made by the railway companies for their road maintenance crews, and 7,000 copies were distributed to the schools, one copy going to each schoolroom.

The radio and press gave excellent cooperation in the educational project. The main points stressed were the symptoms in animals, what to do in case of bites or other exposure, and to whom bites and suspected cases should be reported. It is safe to say that every adult in Alberta heard about rabies before the educational program was completed.

It is significant that all suspected cases in animals and exposure in persons are still being reported diligently, and that to date no human cases have occurred in Alberta. Approximately 200 people have been given the Pasteur treatment, following exposure in such varied ways as bites from rabid dogs or cats, skinning a rabid wolf, fox, or coyote with bare hands, scratches from a rabid lynx, bites from suspected rabid mice, and treating livestock which were later proved to be rabid.

Investigations

Investigations to detect cases of rabies, especially to check on the possibility of persons having been exposed or bitten, are important. The Federal Health of Animals Division veterinary inspectors, the R.C.M.P., and the forest rangers did most of the investigating, but if they were not available, other agencies assisted so that no cases were missed. The Federal Department of Agriculture sent extra veterinary inspectors into northern Alberta to make investigations as well as to vaccinate dogs. Mention must be made of the near perfect investigation reports submitted by the R.C.M.P.

Official investigations have an important psychological and educational value. Just the fact that a person with a dog or cat bite was checked had a salutary effect, as well as preventing the shooting of the dog or cat. Many would not readily accept the recommendation that an offending dog

should be kept under observation for twelve to fourteen days. An investigator could explain the reasons, place the dog under quarantine, make the necessary checks during the period of quarantine, or submit the head, if necessary, for laboratory examination.

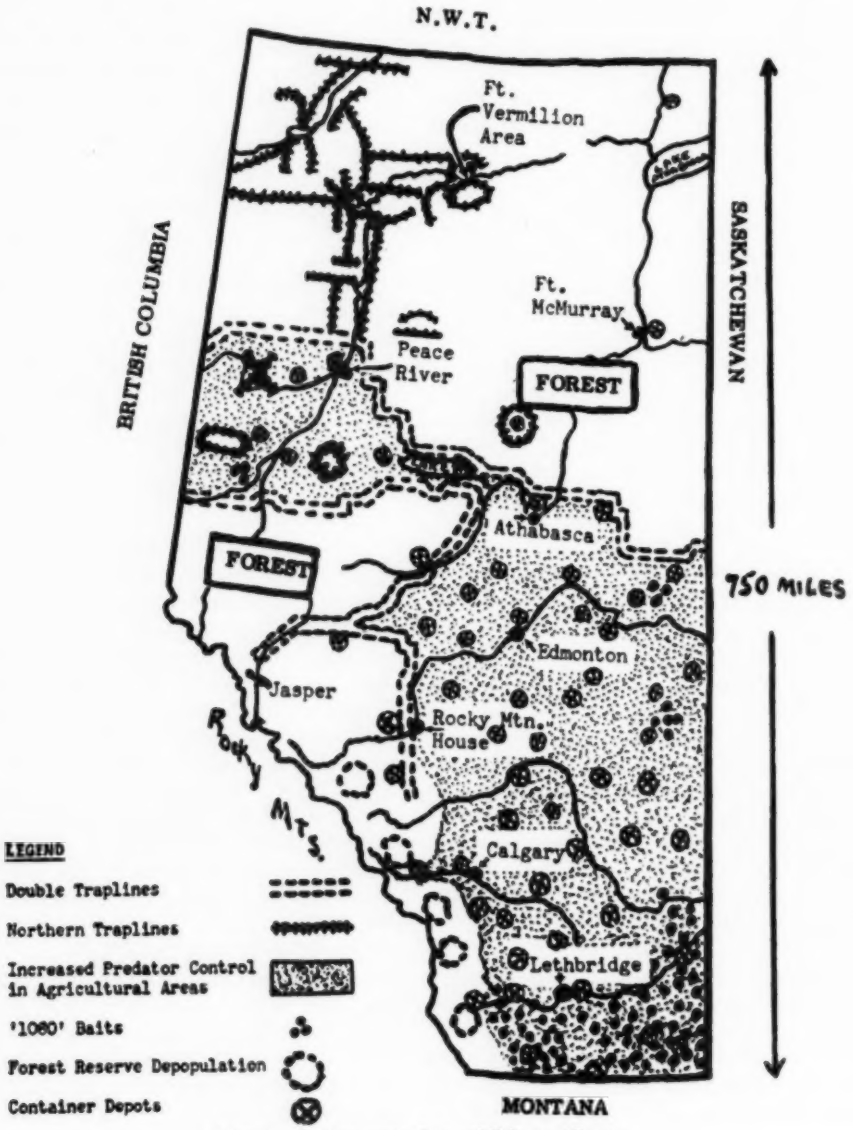
In the case of human exposure to suspected rabid animals, the investigator would make a full report to the medical authorities.

WILDLIFE DEPOPULATION PROGRAM

With the large numbers of wildlife predators, chiefly wolves, foxes, and coyotes, spreading rabies, an aggressive and extensive depopulation program against them was undertaken.

Program of the Alberta Department of Lands and Forests.—The Alberta Department of Lands and Forests is responsible for controlling predators in the forest areas of the province. The director of forestry, with his staff of approximately 70 men, *i.e.*, forestry superintendents and rangers, worked out a plan for traplines under the supervision of the authors.

Traplines.—In October of 1952, professional



Map 2—Rabies control in wildlife in Alberta.

trappers were hired to depopulate the foxes, wolves, and coyotes around the isolated settlements of Fort Vermilion (C) and Keg River (D). In December, 1952, several more were employed on a 125-mile, east-west line south of Margie (G). In January, 1953, since the situation warranted a more extensive program, additional double traplines 5 miles apart were established along the junction of the forests and farming land (map 2). By March 1, 1953, approximately 5,000 miles of traplines were in operation, the aim being to provide settlement protection as far as possible. Certainly the trappers could not kill all the wild animals or prevent rabid ones from moving into the farming areas, but a zone of drastically reduced population would act as a buffer.

Each trapper worked approximately 30 miles of single line. He would build a cabin or shack or put up a tent in the center and work in opposite directions on alternate days, setting out poisoned baits, snares, and traps and checking kills. Most of these trappers lived in the forest all the time, even at −50 F. or colder, reporting their kills to their forest ranger and getting supplies once a month. Many used dog teams in the winter; some had dogs with saddle bags for carrying their poisons and supplies; others used horses; and a few, working along lumber and oil roads in the forest, made use of vehicles. In the summer, horses and canoes were used by many for transportation.

In addition to the above 5,000 miles of traplines, 15 trappers were employed to wipe out pockets of wolves, coyotes, and some cougars along the eastern slope of the Rockies in the conservation forests, from west of Rocky Mountain House to the Montana border, 300 miles to the south (map 2).

Materials and Methods.—The use of poison pellets was emphasized, but it was found that rabid animals seldom took pellets, so snares on trails were used against these to good advantage. Trapping and shooting were used to a lesser degree. The poisons used were capsules filled with sodium or potassium cyanide (16 gr. each) or strychnine cubes (2.18 gr. each). The cyanide capsules were used extensively at first, but the quantity was limited so a complete change-over to strychnine cubes gradually took place. Both were equally satisfactory, but due to its convenience and safety, strychnine is now used exclusively.

These poisons were used in the form of pellets (fig. 2), the capsule or cube being placed in a pellet of fat (½ to ¾ oz.) about the size of a small walnut for wolves and coyotes, with smaller ones for foxes. Since the fat must harden in ordinary fall and winter temperatures, beef fat, lard, bear grease, sheep fat, or horse fat were used. Where mass production was needed, the pellets were made in the small paper cups, about 1 inch high, the kind used in restaurants. The cup was half filled, the fat allowed to set, the capsule or cube placed in the center, and the cup was then filled and set in a cool place. The cups were not removed until the trapper was ready to use the pellets.

Vast quantities of lard and domestic shortening were purchased for making pellets, but often the trapper had to use bear fat or whatever he could get and melt it in his frying pan. The lard pellets were used primarily in fall and winter weather, since they melted under summer conditions. Pellets

Fig. 1—Cans supplied for shipping suspected rabies specimens.

for summer use were made of beef tallow, preferably kidney fat, or of 6 parts lard, 2 parts paraffin, and 1 part beeswax. These pellets were firm at 100 F. In setting out the pellets, the trappers used gloves covered with the same fat as the pellet, and a scent was put on the pellets to make their presence more evident.

When the snow is deep in the forest, wolves congregate in the open spaces, such as on frozen lakes, so baits were placed in such places. A "draw-bait," of a type normal to the area, such as rabbits, pieces of wild game, carcasses, etc., were used extensively to attract the wolves. Ten to 15 poison pellets were dropped in the snow 50 to 100 yards away from the draw-bait (fig. 3) to prevent one wolf from eating them all. Excellent results were obtained where the pellets were sunk into the snow even to a depth of 12 inches, thus making them inaccessible to predator birds such as crows, ravens, and the ubiquitous magpies. On one set, when a horse carcass was used as a draw-bait, a cattle carcass nearby was hardly touched. Perhaps the sweetness of horse meat made it more attrac-

Fig. 2—Poison pellets supplied rangers, farmers, and Royal Canadian Mounted Police for rabies-susceptible, predatory animals.

tive. This might explain why old-time trappers added sugar to strychnine to make it more appealing to wolves.

When it was impossible to use a major drawbait, poison pellets were dropped approximately 100 yards apart along the trails with small pieces

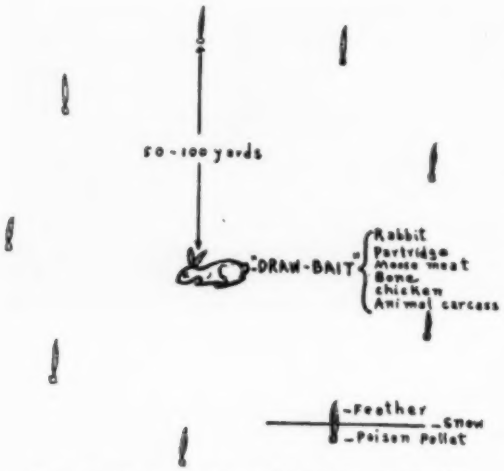


Fig. 3—Poison pellets set for wolves or coyotes.

of meat scattered between, both being covered with snow. The snow caused the animals to spend considerable time looking for the pieces of meat, thus providing ample time for the poison to take effect before they got away.

Another ruse learned from the old trappers was to stick a small feather into each pellet before dropping it into the snow, thus attracting the animals.

Poison pellets placed in an open space for wolves should be at least 100 ft. from the edge of the bush, as other furbearing animals usually will not venture that far; but for foxes, which usually will not go more than 50 to 100 ft. from protection, the poisons should be set in the forest, mainly along their trails or near their dens. Snares are also ideal for catching foxes on their trails.

Another interesting way of outsmarting wolves was to place a piece of moose hide (1 ft. sq.) on the snow with a pellet a few inches underneath, or to roll a pellet in a piece of moose hide. The wolf would start chewing on the hide, find it rather tough, look around for some loose meat and find the pellet. Often the wolf was found dead beside the moose hide having gone back to chewing it after consuming the pellet. Another trick was to remove the marrow from the long bones of big game animals, freeze the bone in a vertical position into the ice on a lake or river, mix strychnine with the marrow and put it back into the bone. A wolf, noticing the bone above the snow, would approach it out of curiosity or for sanitary purposes and finally start gnawing at it. As many as 6 or 7 wolves have been poisoned in this way before a bone was chewed down to the ice level.

There were many lynx in the forests and some became rabid. One entered an Indian cabin, biting and scratching three children before it was killed by their mother with the stove poker. Lynx were cautious about taking poison pellets, although many were killed that way. Some were also snared or trapped. A more successful method was to use a fake trap such as a snared squirrel baited with strychnine. The lynx, in robbing the set, was induced to take the poison.

A bear near Keg River (D) was found to have rabies, so the depopulation of bears was included in the project. Right after hibernation, one pellet could be lethal, but when bears were fat in the fall, it took six to eight to be effective. In October, 1953, 1 grizzly ate 12 pellets containing cyanide and was still living in the summer of 1954. Some of the trappers preferred the cyanide guns or "coyote-getters" (fig. 4) for bears, covering the set with honey to make it attractive. One bear took a single cyanide shot repeatedly and survived, but a double set, head to head, was fatal.

Another bait, developed by the forest rangers, that proved popular and effective was an egg, boiled for two minutes, into which, while hot, strychnine cubes were inserted through a small hole made in the shell. The egg was then sealed with scotch tape or wax. The number of cubes inserted varied for the species: one for foxes and coyotes, two for wolves, and three or four for bears. A scent was often smeared on the eggs when they were set out. Foxes and coyotes liked this type of bait, and since they took a little time to eat it, the chances of finding their carcasses near the spot were increased. The egg bait didn't melt in warm weather, wash away in rains, was not disturbed by mice, rabbits, squirrels, or chipmunks and, if eaten by a crow, raven, or magpie, they would be poisoned anyway.

During the summer months, canned dog food as well as harder pellets was used as bait material, being rolled in birch bark or between pieces of bark with a strychnine cube in it.

Each trapper was issued a definite amount of poison for which he signed a receipt. He was required to keep an accurate account of all sets made and to mark each, either with ribbon similar to that used by oil exploration crews, which also served to attract animals, or by some other marking, such as blazing. Warning posters were tacked up when necessary and notices in the nearest settlement advised of the location of the traplines. Each trapper was required to make a weekly report of his kills when possible.

Snares.—Snares were used extensively on trails in the forest. To save on cost, a length of ordinary hay-baling wire with a shorter-than-usual length of snaring wire was used. The baling wire was doubled to make the snare loop. The trapper could set these rapidly and, not being springy, they were less liable to slip out of position shortly after being set. Furthermore, baling wire could

be more readily attached to shrubbery and was less visible than the heavier snare wire. Because of the danger in handling the carcass, the snare was discarded with it. Some difficulty was experienced in the winter of 1953-1954 in keeping snares at proper heights due to the rapid and frequent changes in snow levels.

Some animals were shot. Most of the forestry officers were given small arms for personal protection while carrying out their other duties, such as timber scaling or fire fighting, it being inconvenient to carry a rifle on such work.

Rabbits.—Rabbit numbers were at a peak in the fall of 1952, especially west of the fifth meridian. Near the mountains, some areas 1 or 2 miles in diameter, with a heavy rabbit population, were favorite feeding places for lynx. A survey of rabbits in the forest near Athabasca (map 2) resulted in an estimate of 32,000 per square mile. As the peak in the fox cycle usually occurs a year after that in rabbits, this was designated as a potential rabies area for the winter of 1953-1954, a correct forecast as most of the positive cases since September, 1953, occurred in this general district. The rabbit population in this area is practically nonexistent now. Negri bodies were found in 1 rabbit which entered a farmer's yard and attacked the dog.

Foxes.—The legislation protecting foxes was removed in all parts of the province so that anyone could kill these animals at any time.

Summer, 1953.—The static traplines were not adhered to in the summer months, when trappers moved back into the forests to search out animal dens. Some trappers went 40 to 70 miles into the woods, thus providing a considerable depth of depopulation. The poison baits were set near animal dens, along ridges, at cleared points, along bush trails where animals would be expected to travel, or on gravel bars, or shorelines of rivers and lakes. Big game-grazing areas were strictly avoided. Again, all sets were marked. In the fall of 1953, small foxes and coyotes were often seen in the woods; probably orphans of the summer campaign.

Fall and Winter, 1953-1954.—While the static traplines had produced satisfactory results in the winter and spring of 1953 when the wildlife population was at its peak and much migration was occurring, the picture had completely changed by the fall of 1953 due to the heavy trapline kills and deaths from rabies. No doubt nature's own crash* also entered into the picture. The population of foxes, wolves, and coyotes in the actual forest districts was low except in a few small areas in which no migratory movement was noticed. However, because there were practically no rabbits, mice, or partridges in the forests, coyotes had concentrated in the marginal farming areas where food was more plentiful.

Trappers, therefore, were assigned to work over pockets of predators in the forest or on the fringes of settlements. The number of trappers was reduced from a peak of 151 in March to June, 1953, to 80 in January, 1954, but some remained on duty in all districts. The greatest concentrations of predators in the fall of 1953 were from the Peace River to the British Columbia border, the Grande Prairie Division, and near Rocky Mountain House (map 2.).

Supplies and Equipment Used.—The amounts of supplies and equipment issued to the trappers to March 1, 1954, will give some idea of the magnitude of the project in slightly over a year of operation.

Equipment.—The equipment used included 6,000 cyanide capsules, 429,000 strychnine cubes, 45,680 rounds of ammunition, 17,296 snares, and 440 traps of various sizes.

Bait.—The following bait was used during this period: 29 horses, 1 cow, 200 lb. of fish, 303 lb. of lard, 2,645 lb. of beef fat and tallow, 1,421 lb. of meat, 2,124 eggs, 2 cases of sardines, and $22.81 worth of dog food.

In addition to the above, the trappers used material such as rabbits and fat from animals, caught or shot on their traplines, for poison pellet material or draw-baits. In fact, most of the bait material was actually obtained right in the forest.

Results.—The trapline activities appealed to the press and the resulting publicity gave the people a feeling that something was being done to protect them, a psychological factor in preventing fear and hysteria.

The following is a brief summary of the activities during March, 1953, in the large Peace River forestry division (from Lesser Slave Lake to the British Columbia border and up to the North West Territories):

No. of trappers		66
No. of miles of trapline		2,230
No. of baits set out		15,592
No. of snares used		2,982
Traps		26
Kills:	Foxes and coyotes	12,831
	Wolves	225
	Lynx	342
	Bear	1

Early in the project, several trappers were ordered to follow poisoned animals until they were found dead. For every dead animal found relatively close to where the pellets had been set out, 3 or 4 more would be found dead at distances up to 3 or 4 miles. This was especially true with wolves. The relative accuracy of this ratio was double checked, then it was used in computing the total estimated kills. Even then, the estimates may err on the conservative side, because many uncounted dead animals were found near sets when the snow melted in the spring.

The following is a conservative summary

*For unknown reasons, fox, muskrat, lynx, beaver, and mice populations build up every few years and then almost disappear.

of the minimum total kills estimated from October, 1952, to March 1, 1954, in all forest areas:

Foxes	50,000
Coyotes	35,000
Wolves	4,200
Lynx	7,500
Bears	1,850
Skunks	500
Cougars	64
Wolverine	1
Badgers	4

At the start of the campaign in October, 1952, in the Keg River and Fort Vermilion districts, each trapper averaged 200 kills per month; one, who was able to use a vehicle, accounted for 470. The Peace River forestry division (map 2), which covered the heaviest wildlife population area, produced the greatest number of kills until the summer of 1953, but during the late summer and fall, practically as many animals were being taken in the Grande Prairie Division (K). This was partly due to a reported movement of wolves and coyotes into that district from British Columbia.

One interesting and important side-effect of the predator depopulation program was the increase in moose and deer populations in all areas. Normally, few sets of twins of either species are seen during the fall months, but in the fall of 1953, twins were common in all forest areas. In the northwestern part of Alberta, the adult moose and deer population also were more numerous, some, presumably, having come from British Columbia where there were more wolves and bears. Later, in October and November, wolves were reported to be moving in, following the big game. Also, in the Whitecourt district (J), partridge families in the fall of 1953 contained practically the same number of birds as when hatched, compared to half that number in other years. However, in most northern areas, partridges were almost completely absent, due to the low ebb of their population cycle.

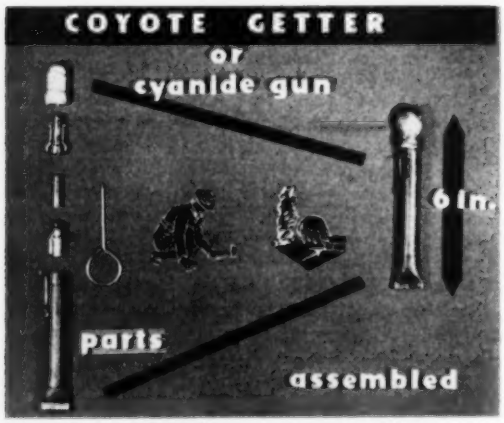


Fig. 4—Cyanide guns or coyote-getters.

In some areas, a two-week poisoning campaign would practically wipe out the foxes and traplines would then have to be moved, but this was not true where there was an influx of foxes.

It is of interest that the kills of lynx were heavier during the winter of the 1953-1954 than the previous year.

AGRICULTURAL AREA PREDATOR CONTROL PROGRAM

The Alberta Department of Agriculture was charged with the coyote control program in the farming areas, the coyote being practically the only predator in those areas except for a few foxes close to the forests. This department had, in 1951, declared the coyote a pest under the Pest Control Act. The department supplied cyanide guns, or "coyote-getters" (fig. 3), to municipalities which agreed to have their pest control officers train farmers in their use, to supply the extra shells, and to keep the necessary records. This lethal weapon was under a rigid system of distribution, and to date it has caused no human accidents. Animal accidents have involved a stray dog and a couple of trespassing calves.

Cyanide Guns (Coyote-Getters).—The coyote-getter is a small gun which is loaded with a .38 caliber cartridge containing cyanide, driven in the ground, and smeared with a scent to attract coyotes (fig. 4). As the coyote pulls the baited cap, the trigger releases a firing pin, which fires a shell, ejecting cyanide powder into its mouth. It will kill an animal weighing approximately 200 lb. Usually, the coyote will die within 40 to 100 yards of the set. In winter, a hole is drilled in a log or block of wood to hold the gun.

To avoid human scent, gloves used only in setting baits are smeared with manure or other attractive scents. The guns are placed near forks of old trails, ridges, bluffs, and other places where a coyote will stop and smell around, or near old carcasses where coyotes have been feeding. Many farmers travel to their sets on a stoneboat loaded with manure and throw some near the set to attract the coyotes and to kill human scent. Others place hay over the set to keep birds from eating the bait, and to attract the coyotes, which often pounce on the hay as if after mice. Posters are tacked at the gates where coyote-getters are set and the neighbors and schools are notified.

It is estimated that between 2 and 3 coyotes were killed per gun per year. Several men killed 30 to 50 coyotes with their guns in the spring of 1953, and one, with a dead calf as draw-bait, got 10 coyotes in four days. Another covered a dead heifer with chicken wire, pegged down so the coyotes couldn't eat the carcass, then set cyanide guns around at a distance of 50 to 100 yards, getting 32 coyotes in a few days. Another farmer had good results by breaking a raw egg over the top of every cyanide gun.

A total of 30,204 cyanide guns and 75,110 cyanide shells, plus 10,006 4-oz. jars of scent were supplied.

With the spread of rabies into farming areas in central Alberta in January, 1953, poison pellets, similar to those used in the forests, were also authorized and distributed. Many of the approximately 80,000 farmers in Alberta, have cooperated. They have set out more poison and covered more territory than government-hired professional trappers could have. The first cooperators were farmers who were losing poultry or sheep to "killer" coyotes. With the advent of rabies, others lent a hand to protect their families, dogs, and livestock. Many who were indifferent even when the rabies epizootic was at its peak, early in 1953, changed their attitude by fall and requested pellets or cyanide guns.

In the Local Improvement Districts, heavily wooded farming areas which have no municipal government, the department hired 15 pest-control officers to train the farmers and to set out poison themselves in the woods between the farms. This provided an organized and systematic control inside the traplines.

In one semiwooded district 100 miles north of Edmonton, with only one farmer in three using poison pellets or cyanide guns, over 2,000 coyotes were killed in 1953. However, coyotes moved in from the forest areas in search of food, some traveling in packs of 5 to 15, with most of Alberta's livestock losses (due to coyote bites) since November, 1953, occurring in this municipality. Therefore, in January, 1954, 21 meetings were held in this district, 9,000 pellets and 1,000 cyanide guns were distributed, and over half the farmers are now poisoning coyotes.

In another municipality, the coyote population was practically wiped out, a feat which could not have been achieved by hiring a few trappers.

In agricultural areas, coyotes were also poisoned with "1080", shot, and snared.

Poison Pellets.—Sufficient materials were supplied in 1953 to make approximately 163,000 strychnine pellets in the farming areas. In addition to methods used by the trappers, some farmers scented the pellets, rolled them in chicken feathers, and threw them into thickets where they were accessible to coyotes or foxes, but birds seldom stole them.

With the poison pellets, it is difficult to find the killed animals as they may go some distance before dying. However, the kill may be verified when coyote howling is not heard at night.

Shooting.—Many coyotes were shot when hunger brought them close to farm buildings.

Coyote hunts, on which only shotguns were allowed, were organized in some areas, with variable results. Up to 100 hunters would converge from the borders of an area where coyotes were plentiful. Very few coyotes escaped, except where the bush was thick or when human safety was given precedence. This method gave urban pepole a chance to aid. Shooting with shotguns from small airplanes also was effective when there was snow on the ground so the coyotes could be easily spotted. One rancher shot 37 in this way; another rancher and his son killed 104 in two weeks. A hired hunter in an airplane shot 86 in two days.

A few trained hounds (vaccinated) were used to hunt coyotes.

Sodium Fluroacetate ("1080").—This poison was used only in southern Alberta in the sparcely settled areas. A total of 180 baits of poisoned portions of horse carcass were set by trained personnel in the fall and winter of 1952. The average kill per set was estimated at 20 to 50 coyotes.

Again in the fall and winter of 1953, 182 sets using "1080" were set out in approximately the same area (map 2).

Snaring and Trapping.—These methods were not employed extensively in the agricultural areas. However, one man caught 20 coyotes in this way in the spring of 1953.

Total Kills in Agricultural Areas.—A conservative estimate has been placed at 60,000 to 80,000 coyotes destroyed since the fall of 1952.

BOUNTIES

There was considerable pressure from some areas, in the fall of 1952 and early 1953, for bounties to be paid on foxes and coyotes, but several years ago a bounty on coyotes had proved costly and ineffective. Furthermore, it should not be necessary to pay a man to assist in a program whereby he aids in protecting his family and livestock. Proponents of the bounty system later acknowledged the superior value of the traplines and other control methods.

The established bounty on wolves was continued since, if taken off, some of the wolf hides would have gone to the neighboring provinces where bounties were being paid. Also, it was better to know who had skinned the wolf. Most trappers did not skin their wolf kills for the bounty, preferring not to risk the danger of rabies infection. Early in the outbreak, two boys had to take the Pasteur treatment after skinning a rabid wolf that had attacked their pigs.

CONCLUSION

The various methods used in controlling the rabies outbreak in the Province of Alberta have been described. Since wolves,

foxes, and coyotes were the main spreaders of the infection, and considering that half of Alberta is forest, it is not possible to draw definite conclusions as to results. That will be done later, in retrospect. The infection is likely to be present in northern areas for some time, if not permanently. The apparent eradication of rabies from southern Alberta to north of Edmonton, a distance of over 400 miles, is encouraging. This was brought about by the drastic depopulation of predatory animals, chiefly coyotes, foxes, and wolves in both forest and agricultural areas, plus the effective quarantine and vaccination of dogs and the destruction of strays. One significant achievement has been the absence of human cases of rabies. In the opinion of medical public health officials, this is due mainly to the thorough educational program undertaken in Alberta, plus the other control measures outlined.

There are many unknown factors regarding rabies in wildlife, as well as a lack of factual knowledge concerning normal migration or nonmigration of wild animals. Until these facts are known, rabies control in wildlife will be empirical, especially in large forest areas. In developed agricultural areas, there is no reason why rabies can not be satisfactorily controlled with an over-all concentrated program. The latter calls for full cooperation from everyone concerned, with a central group to coordinate and aggressively promote all control measures.

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Neuroparalytic Accidents in Man Following Antirabies Vaccination.—Of 14,119 persons given Semple antirabies vaccine in Hong Kong from 1949 to 1952, neuroparalytic accidents are known to have occurred in 17. Diphenhydramine therapy was ineffective but the three patients treated with ACTH responded satisfactorily.—*Vet. Bull., June, 1954.*

A Rabid Rabbit

Sixty-four days after a stray dog had bitten a pet rabbit in Minnesota, the rabbit bit the fingers of two children. The rabbit developed paralysis twelve days later and died in another two. When a laboratory positively diagnosed rabies in the rabbit, the children were given antirabies treatments.—*Norden News, July, 1954.*

Antirabic Vaccination in Greece.—Avianized rabies vaccine was used without ill effects, first on 2,842 dogs on the Isle of Zante, then on 23,000 dogs in the region of Athens.—*Bull. Soc. Vét. Hellenique, July, 1953.*

The only solution to fox rabies is to keep down the density of the fox population, and if 75 per cent of all dogs could be kept immunized rabies would cease to exist.—*T. F. Sellers, M.D., Atlanta, Ga.*

Rabies Found in Texas Bats.—Rabies, identified by inclusion bodies, by mouse inoculation, and by a neutralization test, was found in 2 of 72 insectiverous bats recently studied at a military reservation in Texas.—*U.S. Dept. Health, Education, and Welfare.*

Porcine Myoclonia Congenita

This trembling disease which may affect all the pigs of a litter at birth but, unless they are unable to nurse, gradually disappears after several weeks, is discussed by Dr. W. L. Sipple, in the *Georgia Veterinarian* (May, 1954). As a cause, heredity has been suspected but the disease may appear in unrelated litters in the same herd. Nutrition may be a factor but the condition occurs in swine on many types of diets. In an effort to determine whether it was infectious, a brain suspension from 2 affected pigs was inoculated intracerebrally into 2 other pigs 28 days of age. No symptoms appeared. Treatment does not seem necessary since the pigs recovered spontaneously.

[Affected pigs have been injected with various vitamin complex solutions without apparent benefit.—ED.]

Farm price supports has $6.1 billion tied up, according to latest U.S.D.A. reports.

Physiological Basis of "Brisket Disease" in Cattle

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WHILE THERE is agreement on the pathological findings in "brisket disease" of cattle, several theories exist concerning its etiology. It has been proposed that the consumption of toxic plants,[1] or the deficiency of certain trace minerals in the ration,[2] are etiological factors in this condition.

While it is possible that these factors may contribute to some of the derangements observed in brisket disease, recent studies seem to confirm the findings of Glover and Newsom,[3] who considered the physiological changes which occur in high altitudes as the basic etiological factors responsible for the syndrome of brisket disease of cattle.

A frequently raised objection to high altitude as an etiological factor in brisket disease is that this condition is often found in the so-called "native" cattle, born in high altitudes, which supposedly are already acclimated. However, according to previous studies,[4] it takes many generations before domestic animals become completely acclimated to high altitudes. Therefore, many of the so-called native cattle suffering from this ailment, could be regarded as victims of lack of acclimatization to high altitude, as are cattle which have recently been brought from low altitudes.

ANOXIA IN HIGH ALTITUDES,

A Mechanism of Adaptation.—The physiological changes which occur in high altitudes are the result of adaptive processes to conditions of anoxia prevalent in those altitudes. As we ascend from sea level to the mountains, the atmospheric pressure decreases progressively. This decrease in atmospheric pressure causes in man and animals a condition known as anoxic anoxia,[5] in which the arterial blood, because of the low pressure of oxygen, is insufficiently saturated with this element.

Human beings and animals respond to anoxia mainly by two mechanisms of adaptation, *i.e.*, polycythemia and increased adrenocortical activity. Normally, an initial period of adaptation, followed by the complete acclimatization to high altitude, will be observed.[6] The failure, however, to reach the acclimatization would result in a condition which, depending upon the species involved, is known as Monge's disease[4] in human beings, brisket disease[3] in cattle, and mountain sickness[7] in lambs.

Adaptation and Acclimatization to High Altitudes.—The hemoglobin of the blood carries the atmospheric oxygen to the tissues of the body. In conditions of anoxic anoxia prevalent in high altitudes, the circulatory system assists in the process of adaptation by an increase in the oxygen-carrying power of the blood. This is accomplished by an increase in the concentration of hemoglobin and of red blood cells[4,7] known as polycythemia. When acclimatization is reached, the polycythemia often disappears, and the red blood cell count usually returns to the number present previous to ascending to the high altitude.

Along with polycythemia, there is evidence of an increased adrenocortical activity in the processes of adaptation and acclimatization to conditions of anoxia in high altitudes. For instance, it has been shown that the exposure of rats to experimental low barometric pressures resulted in hypertrophy and histological changes of their adrenal cortex glands which were interpreted as an increased adrenocortical response, followed by adrenal exhaustion.[8,9] The exposure of lambs, which were born at sea level, to an altitude of approximately 13,000 ft., resulted in adrenal hypertrophy and in a differential leukocytic count characterized by lymphopenia, eosinopenia, and neutrophilia.[7] These findings, in accordance with basic studies conducted by Seyle,[10,11] and by Dougherty and White,[12] were interpreted by Cuba[7] as symptoms of increased adrenocortical activity in lambs due to anoxia of the high altitude. In our experience, a few early cases of suspected brisket disease in cattle showed polycythemia varying from 11,000,000 to 16,000,000 red blood cells per cubic millimeter, and a

From the Wyoming State Veterinary Laboratory, Laramie.
The author is indebted to Merck & Co., Inc., Rahway, N.J., for supplying the cortone,® and to the Upjohn Co., Kalamazoo, Mich., for the desoxycorticosterone acetate.®

differential leukocytic count similar to the one found in the lambs described above.

In general, the increase of adrenocortical activity is considered as the response of the organism to stress conditions elicited by nonspecific stimulus.[10] The increased adrenocortical activity observed in rats, lambs, and cattle, as mentioned above, would be elicited by the anoxia of high altitudes.

Failure of Acclimatization to High Altitudes.—The failure to become acclimated to high altitudes results in a condition of chronic anoxemia[4] which causes clinical and pathological derangements. In brisket disease, the persistance of polycythemia and the evidence of a syndrome of decreased adrenocortical activity are the main physiological changes observed.

In our experience, typical cases of brisket disease showed a polycythemia varying from 11,000,000 to 21,000,000 red blood cells per cubic millimeter. This finding undoubtedly indicates that high altitude is a factor in its etiology.

The evidence of a syndrome of decreased adrenocortical activity in brisket disease is substantiated by the hematological and clinical picture of this condition. In our studies, typical cases often showed a differential count characterized by lymphocytosis and eosinophilia. Furthermore, they revealed an increased hematocrit, increased hemoglobin, hemoconcentration, increased blood viscosity, increased heart beat, weak pulse, subcutaneous and parenchymatous edema of pendant parts, frequent diarrhea, and decreased excretion of urine. It has been shown in man and animals that hematological[12,13] and clinical pictures,[14-16] as described above, are characteristic of adrenocortical insufficiency. On the other hand, it has also been shown that a pathological and clinical picture of adrenocortical insufficiency develops in rats which are submitted to prolonged exposure to experimental low barometric pressures.[8,9] Similarly, the prolonged exposure of lambs which were born at sea level, to an altitude of approximately 13,000 ft. in South America, resulted in mountain sickness in some lambs which, according to Cuba,[7] is characterized by a syndrome of adrenocortical insufficiency during the later stages of the condition.

In brisket disease, the adrenocortical insufficiency would seem to be caused by pathological damage of the adrenal cortex caused by anoxemia itself, and also by adrenal exhaustion as a result of increased demands on the adrenal glands during the condition of chronic anoxemia which develops due to failure of acclimatization to high altitudes. In turn, the failure of acclimatization would seem to have its incidence in generations of cattle still unadjusted to high altitudes.[4]

BRISKET DISEASE

Pathogenesis.—The symptoms and pathological changes in brisket disease appear to stem from abnormal metabolism of certain electrolytes (sodium, chloride, potassium) which occur in adrenocortical insufficiencies.[17,18] The deranged metabolism of electrolytes causes an increase in the permeability of the capillaries, while they, at the same time, lose their power of reabsorbing fluid from the tissues.[16,18] As a result of this, a shift of fluids from the blood stream to the body tissues is observed. This appears to be the origin of the extensive edema (intermandibular space, brisket, lower part of the abdomen, wall of the duodenum, abomasum, etc.) observed in brisket disease of cattle.

The continuous loss of plasma from the circulatory system to the tissues, without the necessary repair, causes the decrease of blood volume, the increased blood viscosity, and the hemoconcentration which are evident in brisket disease.

The heart rate increases in an effort to compensate for the decreased quantity of fluid in circulation, and the work of the heart is further increased by the progressive increase of the blood viscosity and the progressive diminishing venous return to the right heart. The persistence of these conditions in brisket disease would result first in hypertrophy and then in weakness of the heart followed by congestion and fatty changes, or necrosis of the liver.

In addition, pathological damage of the myocardium caused by anoxemia itself would aggravate the heart condition.[19]

Finally, the continuance of these disturbances would cause death of the animal due to insufficiency of the circulating fluid and cardiac failure.

Treatment.—Thus, it would appear that either transporting the animals to a lower altitude, or the relief of their adrenocortical insufficiency, would be the treatment recommended for brisket disease.

It has been reported that, on several occasions, the transportation of early cases of brisket disease to a lower altitude has brought relief from the condition.[20,21]

There is not sufficient data, as yet, on the use of adrenocortical replacement therapy in brisket disease to conclusively demonstrate its value in this condition. Cortisone has been used in several cases without apparent benefit.[22] I have used desoxycorticosterone acetate® (Upjohn Co.), 25 mg. intramuscularly, and cortone® (cortisone acetate, Merck & Co.), 500 mg. intramuscularly, every day for three days, in 2 cows with advanced brisket disease. The temporary general improvement disappeared following discontinuance of the treatment. This negative response may be due either to an insufficient dosage and period of treatment with the hormone, or to the possibility that in some advanced cases the serious pathological damage to the heart and liver would make the circulatory disturbances irreversible.

Obviously, the best response to hormone therapy in brisket disease would be in the early stages before the development of serious pathological changes in the heart and liver. The combined use of cortisone and desoxycorticosterone, or the use of adrenal cortical extracts, would be advisable. In addition, a supplementary treatment consisting of intravenous injections of glucose-saline solution should be included.

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Different Etiological Agents for Four Types of Lymphomatosis

A thirteen-year study of a large number of inbred lines of chickens, together with other data, indicates that there are four distinct etiological agents for the four types of lymphomatosis. In this study, which was concerned chiefly with the visceral and neural types, only 2 chickens developed the osteopetrotic type and 0.8 per cent developed the ocular type. The causative agent of the visceral type is transmitted by way of the egg. This mode of transmission has not been proved for the other three types.—*Poult. Sci., March, 1954.*

Epizootic Score Card

ENCEPHALOMYELITIS IN PHEASANTS

An epornitic of equine encephalomyelitis in pheasants, fatal to 100 birds in one flock, was reported in Rhode Island in October, 1953. This is the second such epornitic in pheasants, Connecticut having reported the first, which was fatal to several hundred birds, in 1951.

EQUINE ENCEPHALOMYELITIS

In 1953, 35 states reported 2,813 cases of equine encephalomyelitis in horses, with 827 deaths. The death rate of 29.4 per 100 affected animals was the lowest in twelve years, with the exception of 1944 when it was 24.0 per 100 animals. The morbidity rate of 4.7 per 1,000 animals in the affected region was, on the other hand, the highest since 1938 with the exception of 1941 when it was 6.1 per 1,000 animals. In 1938, when 184,662 equine cases were reported, the morbidity rate was 23.6 per 1,000 animals in the affected areas. The comparable morbidity rate for the eleven years, 1942 to 1952 inclusive, averaged 1.3 per 1,000. The distribution of cases in 1953 is shown in the map (fig. 1).

NATIONAL STATUS OF GARBAGE FEEDING

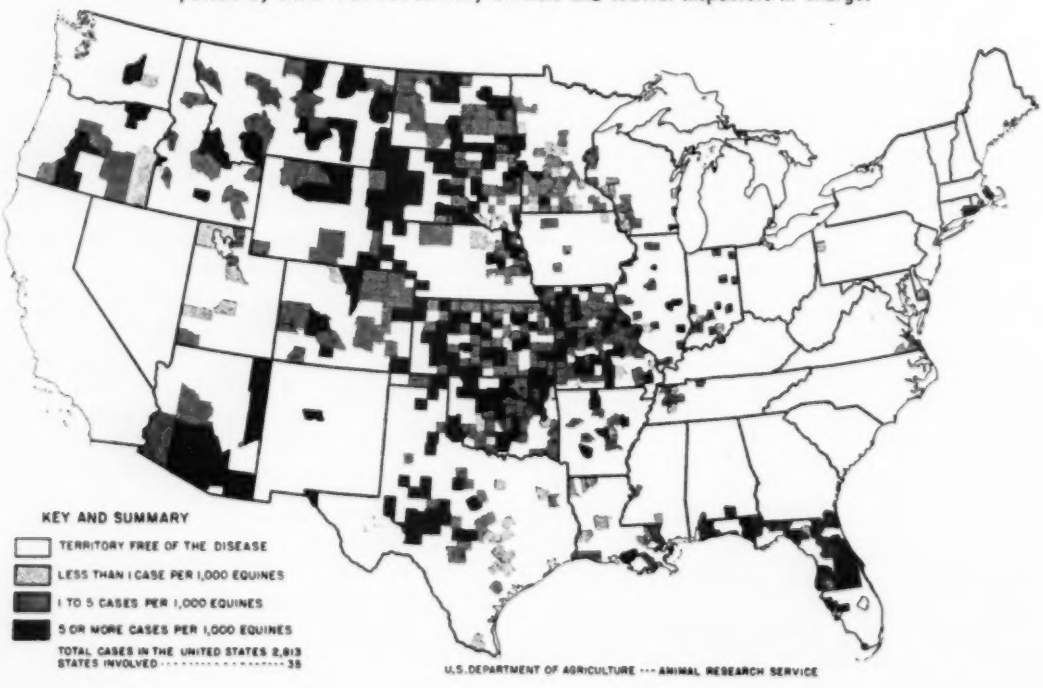
On June 30, 1954, nine states (Colorado, Idaho, Louisiana, Missouri, Minnesota, Nebraska, South Dakota, Tennessee, and Wisconsin) were fully complying with recommendations of the Agricultural Research Service, U.S.D.A. by feeding no uncooked garbage to swine and by having all garbage-feeding establishments inspected semimonthly.

Other states were partially complying, either by enforcing the requirement that the garbage be cooked (5 states) or by making regular semimonthly inspections of all garbage-fed herds (eight states).

During July, vesicular exanthema was diagnosed in swine held for slaughter in one location each in Illinois and Iowa. The source of infection could not be determined by tracing the source of the swine. With the recent addition of Arkansas and Rhode Island, 43 states now have laws or regulations requiring the heat treatment of garbage before it is fed to swine.

Of the eight chronically infected states, California is the only one which is complying in either category, having all such herds inspected but with only 217 of the 601 garbage-feeding premises cooking garbage.—*U.S.D.A.*

Fig. 1—Distribution and degree of incidence of infectious equine encephalomyelitis in 1953, as reported by state livestock sanitary officials and federal inspectors in charge.



EDITORIAL

Traumatic Gastritis and "Tramp Iron"

While veterinarians have been perfecting their treatment of internal injuries in cattle caused by ingested foreign bodies, a condition known variously as foreign body gastritis, traumatic reticulitis, "hardware disease," or sometimes as traumatic pericarditis, others have recently been equally diligent in studying this major problem from a prophylactic approach. Appropriately, since this is a mechanical disease, those concentrating on prevention are chiefly mechanical engineers. This group includes several industrial firms which produce modern cattle-feeding machinery, such as cutters, grinders, crimpers, and mixers but especially those who are providing the magnets or other gadgets for removing metallic contaminants, known to them as "tramp iron," from the feed. However, veterinarians also are making use of magnets.[2,3]

There is a question as to what would be the most suitable name for this condition. A traumatized reticulum is usually part of the picture, although the perforation may have originated in the rumen, but in nearly half of the cases the injury goes beyond the stomach. More specific terms such as "traumatic hepatitis" are required for certain cases but no all-inclusive technical term has yet been suggested to compete with the layman's term of "hardware disease."

While this is chiefly a bovine problem, other ruminants such as sheep and goats[1] occasionally may be the victims. Other species may swallow foreign bodies accidentally but seldom unwittingly in their food.

During the six years, 1948 to 1953 inclusive, 38,099 cattle (an average of 6,335 per year) were condemned by the Federal Meat Inspection Service alone as being unfit for food because of such internal mayhem while perhaps as many others are victimized on farms or elsewhere. While those reported were only 0.046 per cent of the 81,992,000 cattle inspected during those six years, they constituted an estimated loss of over $1 million per year and if all cases were reported, the total annual loss could possibly be $2 million.

Early in 1953, Livestock Conservation Inc. appointed a committee including representatives from the packing industry, the American Farm Bureau Federation, and the AVMA, to further study this serious problem.

As one small part of this study a survey was made, by questionnaire, of the clinical records of the nation's veterinary colleges. While the information gleaned is admittedly incomplete, 12 clinics reported 608 bovine traumatic gastritis cases in 1953, 11 reported 566 cases in 1952, and seven reported 232 cases in 1951. An analysis of the reports for these three years reveals that of the 1,406 animals reported with traumatic gastritis, 93 per cent of which were over 2 years of age, 87 per cent were dairy-type cattle. Of the dairy animals, 87 per cent were operated on, whereas only 57 per cent of the beef-type animals received surgical treatment. Of the 1,406 cases reported, 79 per cent recovered and necropsies were done on 15 per cent.

The foreign body was reported as affecting the wall of the stomach only in about 52.0 per cent of the cases and as involving in addition: the diaphragm in 28.0 per cent, the heart in 8.4 per cent, a lung in 5.0 per cent, the liver in 3.0 per cent, the abdominal floor or wall in 3.0 per cent, and the spleen in 0.23 per cent. The penetrating foreign body was identified as a wire in about 58.0 per cent of the cases, some variety of nail in 36.0 per cent, and as miscellaneous metal in 6.0 per cent.

That this problem seems to be increasing is indicated by one pathology department whose nine-year necropsy report had 117 to 308 cattle per year with "traumatic reticulitis" diagnosed in from 1.0 to 7.0 per

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cent each year, the 7.0 per cent being in 1952. The average for 1945 to 1947 was 1.2 per cent and for 1948 to 1953, inclusive, 5.4 per cent of the necropsies.

The increasing number of cases reported by the clinics could indicate greater prevalence of the malady or more cases presented because of improved therapy—probably both. One clinic which reported 31 cases in 1947, had 181 in 1952, and 220 in 1953. Another reported 17 in 1949, 192 in 1952, and 158 in 1953. The average of five reports for 1947 to 1949 was 13 cases per clinic per year; seven clinics in 1950 and 1951 averaged 34 cases; and the 1952 and 1953 reports averaged 51 cases.

The percentage of beef cattle cases per clinic varied from 0 in several dairy area reports to 66 per cent in two reports from range areas.

The magnet attachments to remove metal particles from processed feed seem successful but can not protect against the bits of wire along fences or the bits of metal strewn around barnyards and feedlots.

As it is unlikely our bovine friends will become more selective in what they swallow, "hardware disease" will doubtless continue but on a considerably reduced scale, we hope.

Armed Forces Veterinary Officers Attend Atomic Radiation Course

Veterinary Corps officers are receiving special training in evaluating the effects of ionizing radiation from atomic weapons on foods and food-producing animals.

The two-week course, the first of its type to be offered in the United States, was initiated on September 9 at the Oak Ridge Institute of Nuclear Studies, Oak Ridge, Tenn.

The curriculum includes biological aspects of radiation phenomena, dosimetry, radio-bioassay in animal tissues, radiation syndromata in the domestic animals, and disposition and salvage of radio-contaminated foods. The course is specifically designed to prepare veterinary officers for their responsibility for determining the wholesomeness and quality of foods in atomic defense.

Classes will be repeated until all veterinary officers of the Air Force and Army have had an opportunity to attend. Veterinary officers assigned to staff positions of high responsibility will be placed on a priority basis for attendance.

Military Veterinarians Praised

How veterinarians in the military service are seldom glamorized, because their job is often at the source of supplies, was told recently by the *Chicago Herald American*. The article tells of duties that may take him to Argentina, inspecting boned beef or, in disguise, to a fish wharf to check on the vendor's methods, and also that he may be found in foreign lands establishing diagnostic laboratories, developing vaccines or supervising phases of animal industry and food production.

Vesicular Exanthema Restrictions Revised

The Agricultural Research Administration, U.S.D.A., on July 23, 1954, issued a decree that swine, or products from swine, from a nonquarantined area, may move interstate if accompanied by an official inspector's certificate stating that for thirty days they had not been in contact with uncooked garbage nor with swine or premises that had been in contact with same.

This is a "relief of restrictions" on swine which had previously had contact directly or indirectly with raw garbage.

Poultry Industry Progress

The poultry industry produces 11 per cent of the cash receipts of farmers in the United States. Since 1935, the annual egg production per hen increased from 122 to 183; broiler production has expanded about 20 per cent each year; and the chicken consumed per person has increased from 18 to 30 lb. per year. In 1947 it required 12.3 lb. of feed and eighty-nine days to produce a 3-lb. broiler versus 10.2 lb. of feed and seventy-two days now. About two thirds of the chicks produced are from pullorum-free stock and the eradication of this disease seems possible.—*True D. Morse, Undersecretary of Agriculture, Washington, D. C.*

CURRENT LITERATURE

Abstracts

Vaccination of Cattle with Brucella Abortus Strain 19

Sexually mature cattle were vaccinated with either 5.0 ml. of *Brucella abortus* strain 19 subcutaneously or 0.25 ml. intracaudally. Differences attributable to the mode of vaccination in the titer of agglutinins, or in the rate of their disappearance, were not apparent. There was a greater tendency for animals to retain significant titers of agglutinins if they had been pregnant at the time of vaccination regardless of the method employed.

The animals were exposed during the third pregnancy by the conjunctival route with 12 x 10^6 organisms of *Br. abortus* strain 2308. Both groups of vaccinated animals were significantly more resistant than unvaccinated control cattle, but differences between the groups were not apparent. —[*David T. Berman, B. A. Beach, and M. R. Irwin: A Comparison of the Effects of Subcutaneous and Intracaudal Vaccination of Sexually Mature Cattle with Brucella Abortus Strain 19. Am. J. Vet. Res., 15, (July, 1954): 406-411.*]

Transmissible Gastroenteritis in Pigs

In recent years, reports have been made from various parts of the United States concerning serious outbreaks of transmissible gastroenteritis in swine. The disease was demonstrated to be caused by a virus (Doyle and Hutchings) and the virus was shown to produce a high mortality in baby pigs under 2 weeks of age. A similar clinical syndrome appeared in swine in New York and, from sick pigs, a virus was procured that, in cross-immunity studies, proved closely related, if not identical, with the type virus of transmissible gastroenteritis.

Studies were initiated to find the means of maintenance and spread within a swine herd. It was found that oral administration of either filtered or unfiltered intestinal suspensions from infected animals readily and regularly produced characteristic signs of illness in pigs and, since parenteral inoculation of virus did not, it appeared that the natural route of infection was by way of the mouth. In the acute phase of illness, virus was found in the blood, liver, spleen, brain, and lung in a low concentration but was present in high concentration in the intestine and kidney. Virus was recovered from feces of infected pigs for intervals of two to eight weeks after inoculation. Since virus was recovered from the lungs and kidneys of infected pigs for only a short time after inoculation, from the blood during the period of clinical illness, and in no instance from the urine, it would appear that persistence of virus in the feces has epidemiological significance. Infected pigs that showed persistence of virus in the intestines were stunted and did not gain weight as well as pigs that did not harbor virus, or uninfected pigs.—[*Kyu M. Lee, Manuel Moro, and James A. Baker: Transmissible Gastroenteritis in Pigs. Am. J. Vet. Res., 15, (July, 1954): 364-372.*]

Intestine of the Turkey Poult

While the normal histology of the intestines of poults is essentially similar to that of the chicken, several differences were noted. Approximately 1,300 sections were made with the following distribution: duodenum, 239; upper intestine, 127; lower intestine, 172; cecum, 472; and rectum, 331. These were from 16 poults aged 1 day to 12 weeks. No marked distinction could be seen between the parts except for the duodenum, cecum, and rectum. Villi decreased in height from duodenum to rectum. No villi were found in those parts of the cecum examined. Lymphoid tissue was present in the tunica propria of all ages of poults. Argentaffin cells were present in the epithelium and tunica propria of all poults. The submucosa was poorly developed. The lamina muscularis was well developed throughout. Goblet cells were present throughout the epithelium. All lining epithelium had a cuticular border.—[*Donald D. Demke: A Brief Histology of the Intestine of the Turkey Poult. Am. J. Vet. Res., 15, (July, 1954): 447-449.*]

Study of Viruses in Young Dogs

Young dogs were exposed to the mouse-adapted Ntaya, Ilhéus, and Bunyamwera viruses by the intracerebral, intranasal, intrarectal, intramuscular, and intraperitoneal routes. After an observation period of sixteen days, the dogs appeared normal. They were killed, the brains were removed aseptically, and a 20 per cent suspension of each was inoculated intracerebrally into mice. The mice appeared normal after a 21-day observation period. Young dogs were not susceptible to these viruses.—[*Reginald L. Reagan, Edward C. Delaha, Mildred T. Stewart, and Arthur L. Brueckner: Studies of Ntaya, Ilhéus, and Bunyamwera Viruses in Young Dogs. Am. J. Vet. Res., 15, (July, 1954): 466-467.*]

Another veterinary publication has appeared, in the form of the *Cougar Veterinary Yearbook*, the first issue of which was published in December, 1953. It is to be published annually by the AVMA student chapter at the State College of Washington. The first issue has 131 pages consisting chiefly of original articles and abstracts.

BOOKS AND REPORTS

Entomology, Including Insect and Rat Control

This book is unique in bringing together two widely separated countries in its authorship. It is well organized and is in two parts. The senior author, from India, has contributed Part I (290 pages) on entomology. Brown, a Canadian, authored Part II (110 pages) which deals with insecticides and insect and rat control.

Paper, print, and illustrations are satisfactory, but the cloth cover is inferior to the books we are purchasing today and, in my copy, was poorly attached to the remainder of the binding. A considerable number of errors in spelling are regrettable in this second edition.

Part I quite understandably places emphasis on species and diseases important in India, but this does not enhance its value for American readers. Three chapters, including 81 pages, deal with Indian mosquitoes and associated diseases. Identification keys and some excellent full-page engravings add to the value of these particular chapters.

Part I alone hardly justifies the use of "veterinary" in the title of the book, at least from the standpoint of an American veterinarian. In some instances, the reader will follow with interest the life history, bionomics, disease relationship, collection, preservation, and dissection of an insect, only to discover that its veterinary significance is then disposed of in a sentence or two. Another example of underemphasizing the veterinary aspect is provided by the worthwhile classification of arthropoda as true carriers of disease organisms affecting man, acting as mechanical carriers of diseases of man, and being themselves injurious to man. A similar classification with respect to animal diseases should be included in a book which contains "veterinary" in its title.

It is Part II which makes the book a worthwhile purchase for American veterinarians. (Part I makes few contributions of veterinary interest which are not adequately covered by other texts on medical and veterinary entomology.) Veterinarians should welcome this means of obtaining up-to-date and detailed information on the subject of insecticides. Rapid advances in this field have left the average veterinarian unprepared to adapt the newer knowledge to his own uses or to make sound recommendations to his clients. A study of this part will leave the reader feeling that he is in possession of the important facts concerning the development and uses of insecticides and he will consider himself brought up to date. This part is systematically divided into the following topics: chemistry of insecticides, toxicology of insecticides, application of insecticides, insecticidal control of noxious Diptera, and control of other species of insects of medical importance.—[*Entomology (Medical and Veterinary) Including Insecticides and Insect and Rat Control. By D. N. Roy and A. W. A. Brown. 2nd ed. Cloth. 413 pages. Illustrated. Excelsior Press, Calcutta, India. Price not given.*]—D. A. PRICE.

Lives of Game Animals

This eight-volume set of books by Ernest T. Seton contains a wealth of information on wildlife, gathered from a variety of locations by a number of observers. It is well illustrated with sketches and photographs.

Students of wildlife, reading critically and with the background of knowledge acquired in recent years, will find errors of fact. Certain of Seton's predictions regarding wildlife populations have surely not been borne out—notably, the tremendous increase in white-tailed deer in many areas.

To the scientist, the style of writing, the colorful descriptions, and dramatization may not be appealing. To many, such a style makes bearable much material that would otherwise be boring. Of special interest are Seton's records of anecdotes and experiences of others. Such records, though they may be technically inaccurate at times, are still of value. And who but Seton would have had the interest or taken the care to record such for a generation? His artistic nature is apparent throughout the texts, adding immeasurably to the reader's understanding.

Truly, here is the work of a painstaking genius, a titan for work, worthy of the library of anyone interested in the great outdoors.—[*Lives of Game Animals. By Ernest Thomas Seton. 8 vol. Charles T. Branford Co., Boston. 1954. Price $50 per set.*]—C. F. CLARK.

General Animal Husbandry

This newly published textbook discusses, generally, reproduction and husbandry in domestic animals.

The introduction explains the various terms used in the management of domestic animals, and also discusses wild animals, birds, fish, insects, etc., with regard to their utility. The first chapter deals with the economic importance of animals, particularly their usefulness in agriculture.

The history of the development of all domestic animals is treated in the second chapter.

In succeeding chapters, reproduction, growth, and development of domestic animals are discussed.

Special chapters deal with the determination and inheritance of sex, and with the influence of the environment to hereditary predispositions, discussing symbiosis and parasitism, nutrition and work, acclimatization and domestication.

The utilization of various species of domestic animals is described from different standpoints, including hereditary predisposition to different organic and infectious diseases. The determination and judgment of the productivity of domestic animals is discussed in detail with regard to sex, age, breed, and general health.

The book is well supplemented by good illustrations. It is well written and is a contribution to the field of animal husbandry.—[*Lehrbuch der Allgemeinen Tierzucht (Textbook of General Animal Husbandry). By Walter Koch. Ferdinand Enke, Stuttgart, Germany. 1954. Price not given.*]—F.K.

THE NEWS

Resolutions Adopted by Second Pan American Congress of Veterinary Medicine

Dr. Benjamin D. Blood, secretary-general of the Directing Council of Pan American Congresses of Veterinary Medicine (see the JOURNAL, July, 1954, pp. 85-87), recently transmitted copies of the 17 resolutions adopted by the Second Pan American Congress which was held in Sao Paulo, Brazil, April 3-10, 1954. In addition to the courtesy resolutions, others were adopted which are given below in condensed form.

Of particular interest is Resolution 17 recommending that the Third Pan American Congress be held in the United States in 1959. This matter was considered by the AVMA Executive Board at the annual meeting in Seattle and will be reported on later.

Resolutions 1, 2, 3, and 4.—Thanks to the city and state of Sao Paulo, the Organizing Committee, and the Paulista Veterinary Medical School.

Resolution 5—Directing Council.—This resolution recommends the formation of a Directing Council of Pan American Congresses of Veterinary Medicine instead of a Pan American Association of Veterinary Medicine (see the JOURNAL, July, 1954, pp. 85-87).

Resolution 6—Foot-and-Mouth Disease.—This was to request the Pan American Foot-and-Mouth Disease Center to inform agencies concerned with production of foot-and-mouth disease vaccine of the recommended techniques for evaluating the vaccines by laboratory and field tests.

Resolution 7—Hog Cholera.—Resolution 7 recommended the application of appropriate organized measures for hog cholera control and the systematic large scale vaccination of swine with inactivated or modified virus, and the rigorous testing of such vaccines for safety and efficiency.

Resolution 8—Rabies.—This recommended that each American government intensify the rabies control campaign, including elimination of stray dogs, compulsory vaccination and licensing of all dogs; also the collection of public health statistics on the incidence of rabies in each country.

Resolution 9—Bovine tuberculosis.—Resolution 9 recommended that all control campaigns be based on testing with standardized tuberculin, and that field studies on vaccination against and treatment of tuberculosis be intensified where the economic conditions of a country does not permit eradication of tuberculous cattle by slaughter.

Resolution 10—Brucellosis.—The tenth resolution recommended that research work on this zoonosis be intensified, that calves 6 to 8 months of age be generally vaccinated, that adult cows be vaccinated with strain 19 vaccine in those herds and areas where eradication of reactors is not feasible.

Resolution 11—Infertility in Livestock.—This problem was recommended for special attention by the next Pan American Congress.

Resolution 12—Artificial Insemination.—It was recommended that priority be given in each country to shipments of semen from semen-collection centers because of the importance of artificial insemination to the improvement of livestock.

Resolution 13—Veterinary Medical Education.—It was recommended that the Directing Council of P. A. Congresses sponsor a commission of specialists to study veterinary medical education in all American countries and report its findings, with recommendations for plans of study and teaching.

Resolution 14—Research Work by Veterinary Schools.—Resolution 14 recommended that schools and faculties of veterinary medicine emphasize the importance of research, and that the schools endeavor to employ full-time staff members to the greatest extent possible.

Resolution 15—Regulation of Practice.—It was recommended that the governments of Pan American countries which do not now regulate veterinary practice endeavor to institute such regulation as a protective measure for the livestock industry and the public.

Resolution 16—Resolutions of First Pan American Congress.—It was recommended that the Directing Council endeavor to obtain necessary action to fulfill the resolutions adopted by the First Congress in Lima, Peru, in 1951.

Resolution 17—Place and Date of Third Congress.—This resolution recommended that the Directing Council consult with appropriate colleagues and authorities in the United States concerning the desire to hold the Third Congress there.

STUDENT CHAPTER ACTIVITIES

California Chapter.—During the spring semester of the 1953-1954 school year, the following speakers addressed the University of California Student Chapter of the AVMA: **Mr. H. Spencer,** superintendent of the William Land Park Zoo in Sacramento; **Drs. N. H. Cassel-**

(Continued on page 337)

News From Washington

Section 324, Public Law 690 (Agricultural Act 1954), 83rd Congress, contains a provision that will **permit a renewed and augmented brucellosis eradication program** and the reinstatement of indemnity payments at the $25 to $50 level. This Act provides that the Secretary of Agriculture **may transfer funds, not to exceed $15,000,000 annually,** for the next two years from the Commodity Credit Corporation to the appropriation item "Plant and Animal Disease and Pest Control" for this accelerated brucellosis program.

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P.L. 761 (H.R. 9366, Social Security Amendments 1954) **excludes self-employed professional persons from the provisions of the Act.** Certain observers in Washington consider this token of deference merely a postponement.

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The Department of Defense has announced **all Army and Air Force Veterinary Corps officers will receive special training in evaluating the effects of ionizing radiation from atomic weapons** on foods and food-producing animals. The two-week course will be conducted at the Oak Ridge Institute of Nuclear Studies, Oak Ridge, Tenn. The curriculum includes biological aspects of radiation phenomena, dosimetry, radiobioassy in animal tissues, radiation syndromata in the domestic animals, and disposition and salvage of radiocontaminated foods. **The first group of veterinary officers reported for study on Sept. 6, 1954.**

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Between April 15 and July 16, 1954, vesicular exanthema appeared in five shipments of swine from Chicago to Springfield, Mass.; also, in one shipment to Baltimore, Md. The swine in the April 15 shipment were found infected forty-eight hours after arrival, and in the other shipments the swine arrived infected. In the Chicago stockyards, infection was found in one lot of 4 swine on July 29. **Infection was found in approximately 6,000 swine at Ottumwa, Iowa, July 26, 1954.** A determination was made in all of these cases as to the origin of the swine, and over 4,000 premises were inspected. As yet, no evidence of infection was found in swine on any of these premises. A meeting was held in Chicago on August 10 by officials and others concerned to discuss the recent infection; also, another meeting was held August 17 in Springfield, Ill.

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U.S.D.A. reports **all flocks of sheep infected with scrapie have been destroyed,** and that some 576 flocks in 39 states are under surveillance due to their association with scrapie-infected or -exposed sheep. The most recent infection in this country was in a registered Suffolk ewe in a small flock in Oregon. **This animal was reported as suspicious by a veterinary practitioner.** Clinical diagnosis was confirmed by laboratory examination on Aug. 20, 1954, by the U.S.D.A. laboratories. The infected flock was slaughtered on August 27.

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The Treasury Department has ruled that the **smuggled Charolais cattle, including the offspring born since date of illegal entry, must be returned to Mexico within ninety days** or be forfeited to the U. S. Department of Agriculture for disposition as the Secretary of Agriculture deems appropriate. This decision clears the way for prompt and proper disposal of these animals.

AVMA Office Address in Washington
Brig. General James A. McCallam (Ret.)
Room 109, 1507 M Street, N.W.
Washington 5, D. C.

(Continued from page 335)

berry, of Cutter Laboratories; and **W. E. Steinmetz,** Sacramento.

At the April 7 meeting, William Bayliss was elected representative to the AVMA convention in Seattle, with Fred Foote and Robert Bramman as first and second alternates, respectively.

Record of Attendance for the Spring Semester

Meeting	Freshmen	Sophomores	Juniors	Seniors
March 3	33	34	35	46
April 7	18	30	30	40
May 5	21	36	54	46
June 2	2	20	20	38

The following officers were elected at the June 2 meeting: William Rushworth, president-elect; Alex Kniazeff, vice-president; Glen Reck, secretary; and Hank Ewers, treasurer.

s/EDWARD M. SMITH, *Retiring Secretary.*

WOMEN'S AUXILIARY

New Officers of Auxiliary.—At the thirty-seventh annual meeting of the Women's Auxiliary to the AVMA, held during the annual AVMA meeting in Seattle, Aug. 23-26, 1954, the following officers were elected: Mrs. L. R. Richardson, Ravenna, Ohio, president; Mrs. Earl N. Moore, Wooster, Ohio; president-elect; Mrs. Alfred E. Coombs, Skowhegan, Maine, first vice-president; Mrs. Lewis H. Moe, Stillwater, Okla., second vice-president; Mrs. E. A. Woelffer, Oconomowoc, Wis., third vice-president; Mrs. Frank R. Booth, Elkhart, Ind., secretary; Mrs. C. M. Rodgers, Blandinsville, Ill., membership secretary; Mrs. John D. Stevens, Sequim, Wash., treasurer; Mrs. R. W. Gold, Salt Lake City, Utah, recorder. Mrs. Russell A. Runnells, East Lansing, Mich., is the retiring president. The following appointments were also made: for editor of the *Auxiliary News,* Mrs. Hazen S. Atkins, Flint, Mich.; historian, Mrs. J. D. Grossman, Westerville, Ohio; and parliamentarian, Mrs. Roy D. Hoffman, Bedford, Pa. The nominating committee for the coming year is composed of Mrs. Leon G. Cloud, Fort Worth, Texas, as chairman, Mrs. Glen Dunlap, Kansas City, Mo., and Mrs. K. O. Lassen, Mesa, Ariz.

Mrs. L. R. Richardson, Ravenna, Ohio, is the new president of the Women's Auxiliary.

Further information and pictures of convention activities will appear in the November JOURNAL.

No invitation is necessary to become a member of the Women's Auxiliary to the AVMA. We welcome all interested women. The dues are only $1.00 per year. Just write to: Mrs. C. M. Rodgers, Secretary, Blandinsville, Ill.

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Kentucky Auxiliary.—The following officers were elected at the annual meeting of the Women's Auxiliary to the Kentucky Veterinary Medical Association on July 21-22: Mrs. Tom Maddox, Greenville, president; Mrs. Wayne Boyd, Hodgenville, secretary-treasurer. There were 35 members in attendance at this meeting.

s/MRS. WAYNE BOYD, *Secretary.*

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Michigan Auxiliary.—The twenty-third annual meeting of the Women's Auxiliary to the Michigan State Veterinary Medical Association was held on June 18-19, 1954, at Charlevoix. Luncheons, tours, and Indian art demonstrations were enjoyed by those present. A contribution of $75 was made to the Student Loan Fund, $25 to the Research Fund, and $25 to the library of the School of Veterinary Medicine at Michigan State College.

The following officers were elected for the ensuing year: Mrs. George Fohey, Clio, president; Mrs. Gilbert Meyer, Detroit, vice-president; and Mrs. Melvin Klooster, Byron City, secretary-treasurer.

s/(MRS. GILBERT) LEE MEYER, *Retiring Secretary.*

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Mississippi Auxiliary.—Members of the Women's Auxiliary to the Mississippi Veterinary Medical Association enjoyed a summer conference at the Buena Vista Hotel in Biloxi on July 11-13. A program of business and pleasure was planned for the two-day conference.

The entertainment began with a get-together buffet supper on Sunday evening. On Monday, the women enjoyed a coke and coffee party followed by an informal business meeting. Seven new members were recognized and welcomed into the Auxiliary. A brief outline of the projects for the year was presented for the benefit of those who were not present at the January meeting. Since the annual convention date of

the Mississippi Veterinary Medical Association has been changed from January to July, the officers will continue to serve until July, 1955.

Other social activities included deep-sea fishing, cruising on the gulf, and sight-seeing.

s/MRS. TERRY S. OZIER, *Secretary*.

U. S. GOVERNMENT

Veterinary Personnel Changes.—The following changes in the force of veterinarians in the U.S.D.A. Agricultural Research Service are reported as of Aug. 20, 1954.

NEW APPOINTMENTS

Stephen Antich, New York, N.Y.
Elliott V. Beamer, Denver, Colo.
Earl E. Grass, St. Paul, Minn.
Finis E. Hilton, East Lansing, Mich.
Francis M. Jackson, Nashville, Tenn.
Reinhards Kugrens, Omaha, Neb.
James M. Mathis, Nashville, Tenn.
Keith T. Pittman, Los Angeles, Calif.
John J. Swanson, Jr., South St. Joseph, Mo.
Wendell L. Tarver, Mexico City, Mex.
Russell D. Williamson, Richmond, Va.
Walter Wirszczuk, Chicago, Ill.

DEATHS

George T. Reaugh, Oklahoma City, Okla.
Arnost Sonnenschein, Los Angeles, Calif.

RETIREMENTS

Laurence B. Adams, Jefferson City, Mo.
George W. Hess, Springfield, Ill.
Walter W. Lafayette, Wichita, Kan.

TRANSFERS

William L. Boone, Jr., from Los Angeles, Calif., to Nampa, Idaho.
Carl E. Boyd, from Boston, Mass., to Columbus, Ohio.
James M. Fancher, from Boston, Mass., to Harrisburg, Pa.
Thomas A. Gage, from San Antonio, Texas, to Bismarck, N. Dak.
Stanley K. Kasperavicius, from Chicago, Ill., to Green Bay, Wis.
Charles R. Omer, from Olympia, Wash., to Albany, N. Y.
Thomas J. Quinlan, from Denver, Colo., to Omaha, Neb.
Jordan E. Rasmussen, from Madison, Wis., to Olympia, Wash.

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U.S.D.A. to Announce Veterinary Trainee Program for 1955.—The Board of Civil Service Examiners of the U. S. Department of Agriculture has notified the JOURNAL that it plans to announce in October an examination for veterinarians (trainee), GS-5, to recruit trainees in the field of veterinary medicine for duty in the Agricultural Research Service during the summer of 1955. It is expected that ARS will employ about 40 trainees (veterinary students) as a result of the examination.

APPLICATIONS

Applicants — Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative By-Laws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., the names of applicants residing within the jurisdictional limits of the constituent associations shall be published once in the JOURNAL.

The following applicants have been certified as members of the constituent association that has jurisdiction over the area in which the applicant resides. This certification was made by the secretary of the constituent association in accordance with Section 2, Article X, of the Administrative By-Laws.

LEE, WELDON R.
Rt. 1, Powell, Wyo.
D.V.M., State College of Washington, 1944.

RICHMAN, ROBERT
2710 Oakley Ave., Baltimore, Md.
D.V.M., Alabama Polytechnic Institute, 1938.

VON TOUR, E.
907 Colorado, Alliance, Neb.
D.V.M., Colorado A. & M. College, 1942.

Applicants — Not Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative By-Laws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., notice of all applications from applicants residing outside of the judisdictional limits of the constituent associations, and members of the Armed Forces, shall be published in the JOURNAL for two successive months. The first notice shall give the applicant's full name, school, and year of graduation, post office address, and the names of his endorsers.

First Listing

BRENNER, CARL F.
Medical Section, 7964 Army Unit, APO 21, c/o PM, New York, N. Y.
D.V.M., Iowa State College, 1935.
Vouchers: W. E. Jennings and G. R. Farmer.

CASTRO, FRED E.
443 Baden Ave., South San Francisco, Calif.
D.V.M., Texas A. & M. College, 1941.
Vouchers: W. E. Collins and L. W. Thom.

Second Listing

HERRERA S., HUMBERTO, Manuel Candamo 166, Lima, Peru.

1954 Graduate Applicants

The following are graduates who have recently received their veterinary degree and who have applied for AVMA membership under the provision granted in the Administrative By-Laws to members in good standing of student chapters. Applications from this year's senior classes not received in time for listing this month will appear in later issues. An asterisk (*) after the name of a school indicates that all of this year's graduates have made application for membership.

First Listing

University of California

ASHTON, RICHARD M., D.V.M.
11966 Ventura Blvd., North Hollywood, Calif.
Vouchers: H. G. Tully and R. L. Mercer.

HERRON, WILLIAM H. K., D.V.M.
Rt. 2, Box 126, Norco, Calif.
Vouchers: T. J. Hage and B. McGowan, Jr.

Johnson, Eugene A., D.V.M.
2585 Soguel Dr., Santa Cruz, Calif.
Vouchers: T. J. Hage and J. F. Christensen.

University of Illinois

Wilkin, Edwin K., D.V.M.
617 E. 5th St., Centralia, Ill.
Vouchers: R. D. Hatch and L. R. Bain.

Ontario Veterinary College

Frankel, Morris, D.V.M.
5732 W. Cermak Rd., Cicero, Ill.
Vouchers: A. M. Collins and J. G. Peck.

Second Listing

Alabama Polytechnic Institute

Bloxham, John C., D.V.M., 2305 Blossom St., Columbia, S. Car.

University of California

Baker, Harold D., D.V.M., 5116 Miriam St., Los Angeles, Calif.
Clinkenbeard, Charles R., D.V.M., P. O. Box 185, Yuba City, Calif.
Dillon, Roy, D.V.M., Rt. 1, Box 100A, Davis, Calif.
Enders, Frank G., D.V.M., 1161 Irwin Lane, Santa Rosa, Calif.
Feldmann, Anthony W., D.V.M., 5224 Vineland Ave., North Hollywood, Calif.
Frost, Clifford A., D.V.M., c/o Dr. Walter W. Weller, Highway 66, Ashland, Ore.
Garibaldi, Jerry F., D.V.M., 1124 S. Main St., Salinas, Calif.
Leck, Arthur A., D.V.M., 2515 E. 73rd Pl., Chicago, Ill.
McDaniel, George E., Jr., D.V.M., 4329 Hilts Ave., Sacramento, Calif.
Martin, William L., D.V.M., Rt. 2, Pearson Rd., Paradise, Calif.
Murray, Howard W., D.V.M., 193 So. Montgomery St., Napa, Calif.
Riggs, William F., D.V.M., 1332 135th Ave., San Leandro, Calif.
Simmons, Gordon T., D.V.M., 308 Springs Rd., Vallejo, Calif.
Stoufer, Robert M., D.V.M., 2037 East Street, Redding, Calif.
Thomas, James P., Jr., D.V.M., 4033 43rd St., San Diego, Calif.
Tobias, Eugene W., D.V.M., 452 Corte Maria Ave., Chula Vista, Calif.
Young, Dean C., D.V.M., c/o Emmet E. Young, P. O. Box 92, Winters, Calif.

Colorado A. & M. College

Taylor, Dee O. N., D.V.M., 1076 S. W. 3rd Ave., Ontario, Ore.

University of Illinois

Dees, Denzil E., D.V.M., 2016 Boudreau Dr., Urbana, Ill.
Fehrenbacher, Walter L., D.V.M., Pittsfield, Ill.
Folkerts, Thomas M., D.V.M., R. R. 1, Lincoln, Ill.
Gunhouse, Thomas J., D.V.M., P. O. Box 236, Frankfort, Ill.
Schlapp, Jewell D., D.V.M., Box 352, Yorkville, Ill.
Shinn, Edward M., D.V.M., 423 E. Wall, Moweaqua, Ill.
Spesard, Stanley R., D.V.M., 324 E. Main St., Shelbyville, Ill.

Iowa State College

Branaman, Edwin W., D.V.M., Larchmont Ave., Bellwick Acres, Harrodsburg, Ky.
Frye, Granville H., D.V.M., Graettinger, Iowa.
Hensley, Robert M., D.V.M., 126½ Barberry Lane, Lexington, Ky.
Yoder, Harry W., Jr., D.V.M., R. R. 1, Mount Morris, Ill.

Michigan State College

Auvil, James D., D.V.M., 424 Chestnut St., Parsons, W. Va.
Baldwin, Peter C., D.V.M., 1634 Cedar, Niles, Mich.
Beck, Clifford C., D.V.M., 1434 Virginia St., Racine, Wis.
Benson, Charles D., D.V.M., Rt. 1, Box 197, Lansing, Mich.
Bergman, George A., D.V.M., Diamond Lake, Cassopolis, Mich.
Boschult, Herald H., D.V.M., 939 Main St., Crete, Ill.
Boyer, Louis W., D.V.M., Rt. 1, Custer, Mich.
Brekke, Eugene, D.V.M., 1002 4th Ave., Stevens Point, Wis.
Brengle, Larry A., D.V.M., 60001 — 8 Mile Rd., South Lyon, Mich.
Cathey, Joyce L., D.V.M., 15521 Jackson Rd., Manchester, Mich.
Cholvin, Neal R., D.V.M., 430 N. Irwin St., Hanford, Calif.
Clark, Hollis H., Jr., D.V.M., 2601 E. Michigan Ave., Lansing, Mich.
Croxton, Dale E., D.V.M., R. R. 4, Box 123, c/o Walter Stinson, Anderson, Ill.
Cruickshank, George, D.V.M., 23806 Cushing Ave., East Detroit, Mich.
DeWeerd, Kenneth N., D.V.M., 420 S. Main St., Wayland, Mich.
Dobias, Albert, D.V.M., Machinaw Ave., Cheboygan, Mich.
Elbing, Raymond H., D.V.M., 3911 Lilac, Lansing, Mich.
Epstein, David I., D.V.M., 1817 Church St., Evanston, Ill.
Gearhart, Lawrence W., D.V.M., 212 E. 7th St., Holland, Mich.
Gleeman, Allen I., D.V.M., 116 Poplar St., Roselle, N. J.
Hall, Arthur E., D.V.M., Box 44, Garrett, Ind.
Hanna, H. Dwight, D.V.M., Case and Monroe Sts., Kinmundy, Ill.

HERBERT, WARD V., D.V.M., 14098 Turner Rd., Dewitt, Mich.
KEARNS, RICHARD J., D.V.M., 124 Derby St., Hingham, Mass.
LINDSAY, RICHARD D., D.V.M., 21 Lincoln Circle, Andover, Mass.
MCCLARNON, GEORGE S., D.V.M., 1003 D Birch Rd., East Lansing, Mich.
MEDLOCK, JOHN F., D.V.M., 1901 13th St., Bedford, Ind.
MEDLOCK, ROBERT W., D.V.M., R. R. 4, c/o O. F. Hammond, Bedford, Ind.
MIEDEMA, GERALD J., D.V.M., 3021 Jefferson Ave., S. E., Grand Rapids, Mich.
MILLER, NORMAN R., D.V.M., R. R. 4, Muncie, Ind.
MITCHELL, GERALD D., D.V.M., 316 Helen Ave., Trenton, Mich.
PARKER, JOHN D., D.V.M., R.R. 1, Woodburn, Ind.
PEARSON, ROBERT E., D.V.M., 1490 E. Cook Rd., Grand Blanc, Mich.
PEINECKE, HENRY J., D.V.M., 15 W. Maple St., Allendale, N. J.
PERRY, DONALD K., D.V.M., Paw Paw, Ill.
PIERMATTEI, DONALD L., D.V.M., 824 S. Waiola Ave., LaGrange, Ill.
RINES, MARK P., D.V.M., School of Veterinary Medicine, Michigan State College, East Lansing, Mich.
ROOKER, JAMES A., D.V.M., 6015 Stroebel Rd., Saginaw, Mich.
ROSE, CLELAND E., D.V.M., 816 N. Ball, Owosso, Mich.
SKINNER, THOMAS J., D.V.M., 415A Willow Lane, East Lansing, Mich.
SNYDER, GERALD R., D.V.M., Box 123, Quinnesec, Mich.
STETSON, JOHN A., D.V.M., 7 South St., St. Johnsbury, Vt.
STOGIS, PAULETTE, D.V.M., Rt. 1, Box 3, Sodus, Mich.
STONE, ROBERT M., D.V.M., 24728 Scotia St., Oak Park, Mich.
TJALMA, RICHARD A., D.V.M., 39 W. 19th St., Holland, Mich.
TODD, RICHARD B., D.V.M., 40 Ford Place, Bridgeport, Conn.
VANDERWAGEN, LAWRENCE C., D.V.M., Zuni, N. M.
WAKEFIELD, DAVID J., D.V.M., 6448 N. Clark St., Chicago, Ill.
WATSON, DONALD R., D.V.M., 805 Maple Lane, East Lansing, Mich.
WIRGAU, MARLO H., D.V.M., 29554 Magnolia Ave., Flat Rock, Mich.

Ohio State University

FOLLIS, THOMAS B., D.V.M., 1518 Bryden Rd., Columbus, Ohio.

Texas A. & M. College

BROUSSARD, VANCE L., D.V.M., 1435 Sustella, Valdosta, Ga.
SMITH, CHARLES K., D.V.M., P. O. Box 206, Elizabethtown, Ky.

Tuskegee Institute

WEBBER, LANXTER D., D.V.M., 1438 G St., S. E., Washington, D.C.

AMONG THE STATES AND PROVINCES

Connecticut

State Association.—The annual meeting of the Connecticut Veterinary Medical Association was held at the Hotel Bond in Hartford on Feb. 3, 1954. At that time, the following officers were elected: Drs. Vincent J. Peppe, Canaan, president; Aaron I. Stern, Waterbury, first vice-president; Joseph G. DeVita, New Haven, second vice-president; and E. H. Patchen, Milford. The following were elected to the executive board: Drs. John P. McIntosh, chairman, Kensington; E. H. Patchen, Milford; Vincent J. Peppe, Canaan, Aaron I. Stern, Waterbury; John A. Rathbone, New London; and William R. Leggett, Westport.

s/NIEL PIEPER, *Resident Secretary.*

Florida

State Association.—On June 13, the Florida Veterinary Medical Association sponsored a one-day symposium, which was financed by one of the large pharmaceutical firms. The following speakers participated in the program: **Drs. W. G. Magrane,** Mishawaka, Ind.; **Russel K. Jones,** Purdue University, Lafayette, Ind.; **C. F. Clark,** dean, School of Veterinary Medicine, Michigan State College, East Lansing, Mich.; **Mark W. Allam,** dean, School of Veterinary Medicine, University of Pennsylvania, Philadelphia; **Frank Kral,** School of Veterinary Medicine, University of Pennsylvania; **S. J. Roberts,** New York State Veterinary College, Ithaca; and **Oliver F. Reihart,** Omaha, Neb.

There were 124 veterinarians in attendance. A very interesting luncheon was held Sunday at which **Dr. Clark** was guest speaker. Other social activities included a golf match on the preceding Saturday.

s/STANLEY C. WASMAN, *Resident Secretary.*

Illinois

Swine Brucellosis in Illinois.—In 1953, 34,401 swine from all parts of Illinois were tested for brucellosis, revealing 1,843 reactors, or 5.4 per cent. In 1952, 6.6 per cent reacted.

Leptospirosis in Cattle and Swine.—In Illinois, from January, 1952, through April, 1954, 2,153 herds of cattle were tested for leptospirosis, with reactors being revealed in 29.4 per cent of the herds and in 14.5 per cent of the 23,000 cattle tested. Of the 575 swine herds tested, 28.9 per cent revealed reactors, with 19.5 per cent of the 4,518 individual swine being

positive. Reports by veterinarians indicated that abortion was a symptom in 58 per cent of the bovine herds and 85 per cent of the porcine herds; hemoglobin-urea was evident in 30 per cent of the former and 11 per cent of the latter; icterus was present in 15 per cent and 13 per cent, respectively, and anemia in 19 per cent and 9 per cent, respectively.

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Drs. Sullivan and Manning Join University Staff.—Drs. D. J. Sullivan (MSC '43) and J. P. Manning (KSC '51) have joined the faculty of the College of Veterinary Medicine, University of Illinois, Urbana. Dr. Sullivan is an instructor in the Department of Veterinary Pathology and Hygiene and Dr. Manning in veterinary clinical medicine. Both are members of the AVMA.

Indiana

Central Association.—The Central Indiana Veterinary Medical Association held a business meeting at the Essex House in Indianapolis on August 12. Guests present included Lt. Robert Barnett, post veterinarian of Fort Benjamin Harrisson, and Dr. Lee, a medical doctor from Seoul, Korea, who is doing research in this country.

s/L. M. BORST, *Secretary.*

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Northwestern Association.—On July 29, members of the Northwestern Indiana Veterinary Medical Association met in Brook to hear **Dr. Dennis Sikes** of Purdue University, Lafayette, discuss swine erysipelas. His talk was followed by a lively discussion.

The women were entertained by Mrs. N. K. Decker at the Decker residence, Dr. and Mrs. Decker were hosts.

Officers of this association are Drs. R. F. Portman, Lafayette, president; C. White, Kentland, vice-president; and Leo Cahalan, Logansport, secretary-treasurer.

s/J. L. KIXMILLER, *Resident Secretary.*

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Death of Mrs. George W. Gillie.—Mrs. Grace Merion Gillie, wife of Dr. George W. Gillie, former Congressman from the Fourth District, died on Aug. 30, 1954, in Lutheran Hospital, Fort Wayne, where she had undergone major surgery following a brief illness.

Mrs. Gillie, 67, was born in Columbus, Ohio, and was a graduate of Ohio State University. She and Dr. Gillie were married in 1908, the year following his graduation in veterinary medicine from the university. A member of the Plymouth Congregational Church, Mrs. Gillie belonged to the Order of the Eastern Star, the D.A.R., the Fort Wayne Woman's Club, the American Legion Auxiliary, and the Auxiliary to the AVMA.

Surviving Mrs. Gillie are her husband, two daughters, Mrs. Elton Marquart, Fort Wayne, and Mrs. John P. Strawbridge, Darmstadt, Germany; two brothers and a sister.

Funeral services were held on September 2 from the Klaehn Funeral Home, Fort Wayne.

Kentucky

State Association.—The forty-third annual meeting of the Kentucky Veterinary Medical Association was held at the Seelbach Hotel in Louisville on July 21-22, 1954. It was one of the most successful meetings in the history of the Association, with almost the entire membership in attendance—250 registered for the meeting, and 150 of these were veterinarians.

Among the highlights of the program were the fine talks given by **Brig. Gen. J. A. McCallam,** Washington, D. C., president of the AVMA; **Drs. Ernest S. Tierkel,** U. S. Public Service, Atlanta, Ga.; **C. A. V. Barker,** Ontario Veterinary College, Guelph; **F. J. Kingma,** Ohio State University, Columbus; and **C. D. Van Houweling,** Agricultural Research Service, Washington, D. C. Other fine papers were presented by **Drs. J. A. Winkler,** Cold Spring; **Vincent D. Bohannon,** Hopkinsville; **L. L. Breeck,** state veterinarian, Frankfort; and **Leslie W. Rowles,** Louisville.

Perhaps the most discussed problem was the state law permitting "qualified persons" (owners or operators of licensed kennels) as well as veterinarians to administer rabies shots to dogs. The Association unsuccessfully opposed this clause.

The following officers were elected: Drs. Wayne W. Boyd, Hodgenville, president; John Miller, Clinton, first vice-president; H. A. Gray, Bowling Green, second vice-president; Vernie L. Nickell, Winchester, third vice-president; Robert J. Ausherman, Lexington, secretary-treasurer; and T. J. Stearns, Louisville, resident secretary. Dr. D. E. LaBore, Cynthiana, was elected to the executive committee which now consists of the following men, in addition to Dr. LaBore: Drs. L. L. Breeck, Frankfort; Wm. R. McGee, Lexington; L. L. McBride, Shelbyville; and L. G. Northington, Mayfield. Those in attendance enjoyed dinner and dancing the evening of July 21, in the Grand Ball Room of the Seelbach Hotel.

s/T. J. STEARNS, *Resident Secretary.*

Louisiana

State Association.—The third annual fall meeting of the Louisiana Veterinary Medical Association was held at the Country Club in Lake Charles, Sept. 8-9, 1954.

The following speakers participated in the program: **Drs. H. T. Barron,** Taylor, Texas; **G. R. Burch,** director, Pitman-Moore research Farm, New Augusta, Ind.; **J. E. Burnside,** toxicologist, Animal Disease Laboratory, Tifton, Ga.; **H. A. Burton,** Alexandria; **T. W. Leonard,** Bastrop; **J. B. Maxfield, Jr.,** radiologist, Dallas, Texas; **J. L. Melancon,** Bunkie; **L. H. Pfrimmer,** Franklinton; **E. E. Saulmon,** Agricultural Research Service, Baton Rouge; **H. V. Smythe,**

Lake Charles; **M. D. Sutter,** Jensen-Salsbery Laboratories, Kansas City, Mo.; **R. D. Turk,** A. & M. College of Texas, College Station; and **Kenneth Whittington,** Memphis, Tenn.

After the annual business meeting on Wednesday afternoon, members enjoyed a banquet at the Lake Charles Country Club.

s/R. B. LANK, *Secretary.*

Maryland

Death of Colonel John H. Kintner.—Colonel John H. Kintner (V.C., U.S.A., Ret.), director of the Grayson Foundation Research Laboratories at College Park, died on Aug. 28, 1954, at Walter Reed Army Hospital, Washington, D.C., at the age of 62.

Born in Riegelsville, Pa., in 1891, he attended the School of Veterinary Medicine, University of Pennsylvania, graduating in 1917. He entered the service as a second lieutenant in 1917 and served with the A.E.F. in World War I. Later, he had various assignments including the Army Veterinary Laboratory in Philadelphia, the Philippines, and other stations. In the Philippines, Colonel Kintner did notable work on osteomalacia as a member of the Medical Department Research Board.

In 1943, he was selected to head the veterinary section of the Pan American Sanitary Bureau to make a comprehensive study of animal disease incidence in Mexico, Central America, and Colombia, S. A. After his retirement in 1946, Colonel Kintner was recalled to active duty in the Surgeon General's office until 1948. He then was employed by the Grayson Foundation to direct the laboratories where he continued studies of equine virus diseases until his death.

Surviving are his widow, Mrs. Elizabeth Turner Kintner, Hyattsville, Md.; his daughter, Mrs. Elizabeth Bell of Alexandria, Va.; two brothers, and two grandchildren.

Missouri

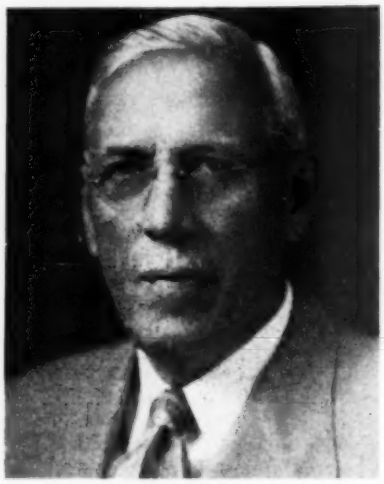
Kansas City Association.—The annual picnic and family outing of the Kansas City Veterinary Medical Association was held August 7 at the Knappenberger Farm in Olathe, Kan. Those in attendance enjoyed a fried chicken dinner with all the trimmings, and an afternoon of sports and visiting.

s/J. C. DAVIS, *Secretary.*

Nebraska

Death of Dr. Carl J. Norden, Sr.—Dr. Carl J. Norden, Sr., founder and chairman of the board of Norden Laboratories, Lincoln, Neb., died on Aug. 21, 1954, at the age of 65 years. Death came unexpectedly from cerebral hemorrhage during convalescence from injuries sustained while on vacation in Idaho in July.

Born in Sweden on Dec. 18, 1888, Dr. Norden came to the United States as a boy, and the family settled in Polk County, Nebraska. He was graduated from Kansas City Veterinary College, 1911, practiced in Nebraska City, Neb., and later became associated with two leading veterinary supply firms. He was an officer in



Dr. Carl J. Norden, Sr.

the Veterinary Corps, U. S. Army, World War I. At the close of the war he was appointed assistant state veterinarian for Nebraska, and in 1919 founded Norden Laboratories. Closely identified with the veterinary profession through the years, he also served as president of the Missouri Valley Veterinary Medical Association and as secretary and president of the Nebraska State Veterinary Medical Association. He was a member of the AVMA for forty-three years, having joined the Association in 1911, the same year he graduated from veterinary college.

Funeral services were held August 23 at the Holy Trinity Episcopal Church, Lincoln, Neb., with burial at Wyuka Cemetery of that city.

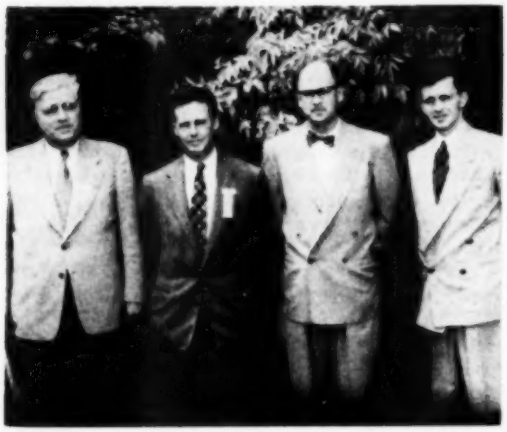
Survivors include his wife, Emma, and a son, Dr. Carl J. Norden, Jr., a 1943 graduate of Iowa State College, who is vice-president and secretary of Norden Laboratories.

New Brunswick

Maritime Association.—The three Maritime Veterinary Associations (New Brunswick, Nova Scotia, and Prince Edward Island) held their fifth annual joint conference at Mount Allison University on June 22-24, 1954. The meeting was opened by **Dr. C. A. Mitchell,** chief, Division of Animal Pathology.

The following speakers appeared on the program: **Drs. J. Dufresne,** École de Médécine Vétérinaire de Quebec, St. Hyacinthe, president of the Canada Veterinary Association; **J. F. Frank,** Division of Animal Pathology, Sackville,

N. B.; **D. B. Butterwick,** New Brunswick Veterinary Laboratory, Fredericton; **G. C. Fisher,** Prince Edward Island Veterinary Laboratory,



Committee on arrangements for the 1955 conference of the Maritime Veterinary Associations. They are (left to right)—Drs. M. I. Lowrie, secretary, Prince Edward Island Association; W. A. Roach, secretary, New Brunswick Association; R. McG. Archibald, secretary, Nova Scotia Association; and J. F. Frank, Division of Animal Pathology, secretary for the committee.

Charlottetown; **H. van Zwol,** Nova Scotia Veterinary Laboratory, Truro; Mr. F. G. Proudfoot, poultry husbandman, Nova Scotia Agricultural College, Truro; **Drs. J. H. Ballantyne,** head, Department of Anatomy, Ontario Veterinary College, Guelph; **L. A. Donovan** and **S. E. Magwood,** Sussex, N. B.; **F. H. Stevens,** Concord, N. H.; **R. McG. Archibald,** Truro, N. S.; **G. W. Dashner,** St. Stephen, N. B.; **H. H. Kelly,** Charlottetown, P.E.I.; **J. A. MacKay,** New Glasgow, N. S.; and **R. Gwatkin,** Animal Disease Research Institute, Hull, Que.

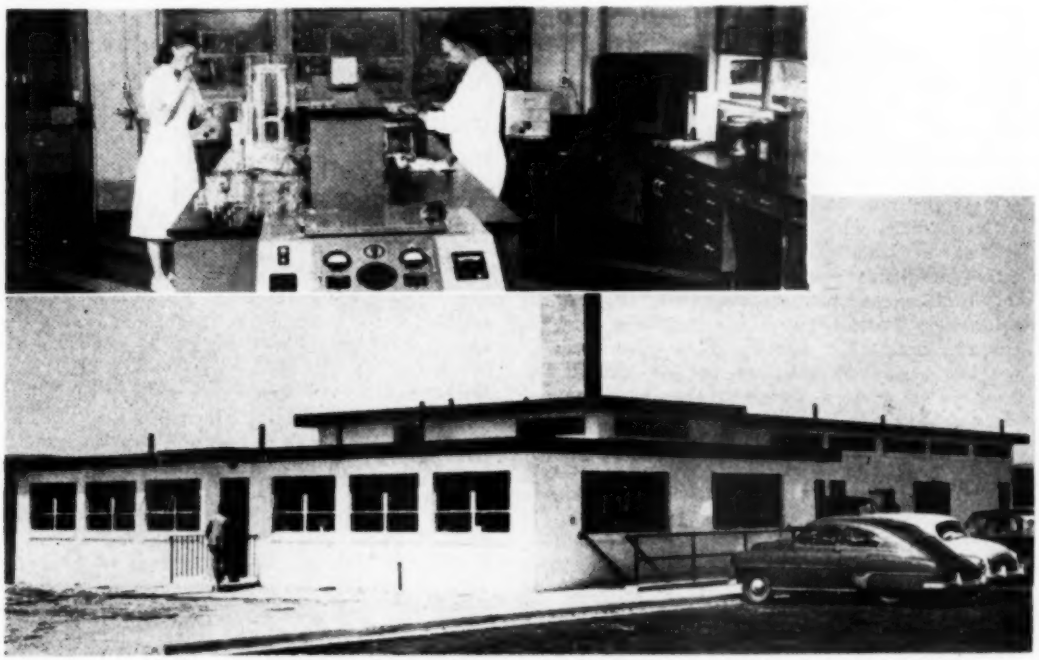
At the annual banquet, the speaker was **Mr. J. G. Wright,** former chief of northern affairs, Department of Mines and Resources, who delivered a very interesting address on northern Canada.

During the business session, the delegates voted to continue their annual $50 prize to a student in comparative anatomy at Mount Allison University. They also voted to have their next conference in Sackville in June, 1955.

s/J. F. FRANK, *Resident Secretary.*

Pennsylvania

New Building for Research in Poultry Diseases.—A new building to be used for the study of poultry diseases has been constructed at the veterinary research center of the University of Pennsylvania. It was financed by contributions from livestock owners, poultrymen, and farm organizations, plus a state appropriation. A similar but somewhat larger building has been planned for the study of animal diseases. Until this second building is constructed, this type of research will be carried out in the poultry unit which includes ten isolation units and labora-



The new building to be used for research on poultry diseases at the University of Pennsylvania veterinary research center. Inset—The main laboratory to be used for the study of poultry diseases.

tories for work in bacteriology, virology, pathology, and serology.

s/R. D. HOFFMAN, *Resident Secretary.*

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University Receives Grant for Psittacosis Studies.—A grant of $24,000 for research on psittacosis was recently made to the University of Pennsylvania by Harz Mountain Corporation, an importer and distributor of birds. The grant will be used to support studies by Dr. G. W. Rake, research professor of microbiology in the medical school, on the serological diagnosis of psittacosis with the hope of developing a specific antigen, and by Dr. Raymond Fagan, associate professor of preventive medicine in the veterinary school, on field diagnosis of the disease and evaluation of isolation techniques.

Tennessee

Death of Dr. Coughlin.—Dr. Dennis Coughlin, Topeka, Kan., died on Aug. 11, 1954, at the age of 64. His death came without warning while he was on an inspection trip with a new employee he was training.

Dr. Coughlin was born in Mitchell, S. Dak., on April 20, 1890. He graduated in 1917 from the Kansas City Veterniary College and practiced his profession a short time before entering government service in 1918. For many years, he served the U. S. Bureau of Animal Industry in Tennessee on tuberculosis and brucellosis control and other field projects. In March, 1951, Dr. Coughlin was transferred from Knoxville, Tenn., to Topeka, Kan., as assistant veterinarian in charge.

Those who knew Dr. Coughlin learned to love and respect him for his many admirable traits. He was honest, efficient, and thorough in his work, with a special interest in training new employees. There are many veterinarians in federal service today who will recall the thorough training they received from Dr. Coughlin. One of his most admirable traits was his love for his fellow man. He never overlooked the opportunity to give a boost to those of his acquaintances who had had reverses.

He was intensely interested in the national, state, and local veterinary organizations, attending their meetings and supporting them both financially and otherwise. He had been a member of the AVMA for thirty-six years.

Dr. Coughlin is survived by his widow, *née* Esther Bracken; a son, Dr. Dennis Coughlin, Jr., who is practicing medicine in Knoxville, Tenn.; three sisters; and one brother.

s/D. B. PELLETTE, *Veterinarian in Charge, Disease Control and Eradication.*

Virginia

Dr. Bell, Director of Experiment Station.—Dr. Wilson B. Bell, a member of the staff of Virginia Polytechnic Institute, has been elected associate director of the Virginia Agricultural Experiment Station. Dr. Bell received his D.V.M. degree from New York State Veterinary College, Cornell University, in 1939; his Ph.D. degree from the Virginia Polytechnic Institute in 1952. He served as assistant in bacteriology at New York State Veterinary College from 1935 to 1939; associate in veterinary science, College of Agriculture and Agricultural Experiment Station, University of California, 1939-1946; associate professor of animal pathology, Virginia Polytechnic Institute and Agricultural Experiment Station, 1946-1947; and professor at this Institute since 1947. He served in the Veterinary Corps of the U. S. Army during World War II, attaining the rank of colonel.

Dr. Bell is a member of several scientific associations including the Virginia and Southern Veterinary Medical Associations, the AVMA, and the Southern Regional Research Workers. He has published several articles in veterinary and other scientific journals.

s/I. D. WILSON, *Head, Department of Biology.*

Washington

Leptospirosis Research Furthered by New Building.—The study of bovine leptospirosis, a major project at Washington State College, which had been conducted chiefly in the field, will be accelerated by the use of the new isolation building erected, just south of Wegner Hall.—*Cougar Vet. Yearbook, 1953.*

FOREIGN NEWS

France

Veterinary Student Congress.—Approximately 100 students from 20 countries (Germany, Belgium, Chili, Spain, United States, Finland, France, Great Britain, Holland, Ireland, Italy, Mexico, Norway, Paraguay, Sweden, Syria, Turkey, Uruguay, Venezuela, and Yugoslavia) attended the second International Congress for Veterinary students on July 18-31, 1954, at the Ecole Vétérinaire d'Alfort.

A permanent secretariat was established with the view of collecting information of international professional interests, providing technical assistance for student exchange, and publishing an information bulletin. M. Leclerc (France) is in charge of the secretariat which has been established at the veterinary college of Alfort.

The Congress elected Hermann Becht (Giessen, Germany) as president and Jan W. Zantiga (Utrecht, Holland) as vice-president. It is planned to hold the 1955 congress at Utrecht.

The participants were received in the town hall of Paris and the International Office of Epizooties. During the Congress, they visited animal breeding stations, pharmaceutical establishments, and places of cultural interest in Paris, Fontainebleu, Versailles, Chantilly, and the Castles of Loire.

India

Dr. Seetharaman Visits AVMA Headquarters.—Dr. S. C. Seetharaman, B.V.Sc., head of the Division of Biological Products, Indian Veterinary Research Institute, Izatnagar, India, visited the AVMA Headquarters, Aug. 3, 1954. He was in the United States for three months, under the Point Four Program, making a tour of the various biological production laboratories in all sections of the country. He attended the Seattle Convention before returning to India.

New Zealand

Bovine Tuberculosis Eradication.—New Zealand has a commission inquiring into the feasibility of bovine tuberculosis eradication. Less than one-third of the cows in the Auckland milk district have been tested, but in the herds tested three times, the loss has been 18.6 per cent. Some fear that if all the herds were tested, it would be difficult to maintain the necessary milk production.

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Artificial Breeding Service.—In 1951, nine commercial artificial breeding groups were in operation in New Zealand, serving 5,000 cows. In 1952, there were 21 groups with 15,000 cows and in 1953, 45 groups with 32,000 cows. An additional 13 groups applied but could not be serviced.

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Veterinary School Considered.—New Zealand, with 5.5 million cattle, 35 million sheep, 600,000 swine, and 160,000 horses, has less than 250 veterinarians. Ten years ago, when there were only 69 veterinarians in practice, preventable livestock losses were estimated at 10 million pounds sterling a year. It was estimated that a school would cost 250 thousand pounds sterling to build and 40 thousand pounds a year to operate. It is now costing 20 thousand pounds a year to train or import veterinarians, including the subsidy to the veterinary school at Sydney University, Australia, for training 15 students per year, a total of 75 students being enrolled annually in the five-year course.

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Veterinary Club Opened in Morrinsville.—On June 23, the Morrinsville Veterinary Club opened its new building which includes the following facilities: a veterinary library, drug store, large area for bulk storage, a comfortable board room, three consulting rooms, a dispensary, theater, attractive office suites, and a large shop to be converted for supply space for a future x-ray plant.

Easy access to farms makes it unnecessary for large animals to be brought to the building for treatment.

There are 1,700 members of the club, which includes farmers and a staff of nine veterinarians under the direction of Dr. G. A. Peterson of Toronto, Canada. The other veterinarians include three Australians, an Englishman, a Scot, and three New Zealanders.

s/J. SMITH, *Corresponding Secretary.*

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More Attractive Jobs Sought for Veterinarians.—Dr. R. M. C. Gunn, dean of the faculty of veterinary science at Sydney University, where New Zealand veterinarians are trained, believes jobs must be made more attractive in New Zealand to persuade new graduates to practice there. He noted that only 13 new students were registered from New Zealand for the past school year, although 14 places were allotted. Many veterinarians had indicated that employment conditions in New Zealand were unsatisfactory. Dr. D. F. Finlay, a member of the faculty of the University of Sydney, believed that Massey Agricultural College in New Zealand would be an ideal site for a veterinary school and research center, since animal industries are important to the country.

s/J. SMITH, *Corresponding Secretary.*

Peru

Dr. Preston Visits in United States and Canada.—Dr. Harry Preston (M.R.C.V.S. Edinburgh '24), director of the National Institute of Animal Biology in Lima, Peru, visited Association headquarters on July 6 during the course of a two-month visit to the States under the auspices of the Rockefeller Foundation. During his stay, Dr. Preston visited veterinary medical schools and animal disease research centers in Washington, D. C., New York State, Pennsylvania, Georgia, Alabama, Texas, Missouri, Colorado, Illinois, Minnesota, Wisconsin, Indiana, and Ontario, Canada.

The Institute of Animal Biology in Lima is charged with production of veterinary biological products, investigations of various animal diseases and their diagnosis, and the control of veterinary biological products imported or manufactured in Peru.

Philippines

Dr. Solis Visits AVMA Central Office.— Dr. Jose A. Solis (PHI '34), acting head of the Department of Anatomy, College of Veterinary Science, University of the Philippines, Quezon City, visited the AVMA headquarters in Chicago on June 18. He was on a tour of several veterinary schools and had been at Iowa State College for about six months taking postgraduate work. Dr. Solis is the author of several articles that have appeared in the JOURNAL. He returned to the Philippines after attending the AVMA convention in Seattle.

VETERINARY MILITARY SERVICE

Short Course in Pathology of Diseases of Laboratory Animals.—A short course entitled "Pathology of Diseases of Laboratory Animals"

is scheduled for Dec. 6-10, 1954, inclusive, at the Armed Forces Institute of Pathology, Washington 25, D. C. It is designed to provide training for professional officers who have charge of procurement and maintenance of animal colonies and is intended particularly to help them interpret natural diseases which may influence the supply of laboratory animals or their suitability for experimental use. The course will be of value only to those individuals qualified to understand disease processes and to absorb information in the field of pathology. Veterinary pathologists should find it of particular benefit, but pathologists, veterinarians, and others with similar professional backgrounds will also find the course of value.

For information as to the eligibility requirements, qualifications, application procedures, and selection of students, refer to Circular 43, Office of the Surgeon General, U. S. Army, Main Navy Building, Washington 25, D. C.

s/BRIG. GEN. ELBERT DECOURSEY, *Director, Medical Corps, U. S. Army.*

BIRTHS

Dr. (ISC '52) and Mrs. Lenwood S. Shirrell, Frankfort, Ky., announce the birth of a daughter, Peggy Lynn, on July 16, 1954.

Dr. (API '53) and Mrs. C. Bert Hill, Amory, Miss., announce the birth of a son, Charles Bert II, on July 26, 1954.

Dr. (OKL '53) and Mrs. Louis E. Carlin, Collinsville, Okla., announce the birth of a son, Cary Louis, on July 28, 1954.

DEATHS

John A. Clark (COL '32), 43, Santa Monica, Calif., died April 3, 1954. Dr. Clark had retired from practice.

★**Dennis Coughlin** (KCV '17), 64, Topeka, Kan., died Aug. 11, 1954. Dr. Coughlin was admitted to the AVMA in 1918. An obituary appears on page 344 of this Journal.

Horace B. Craig (MCK '11), 72, Minneapolis, Minn., died April 12, 1954. Dr. Craig practiced

The eighty-sixth class of veterinary officers completed (Aug. 28, 1954) the course at the Army Medical Service Meat and Dairy Hygiene School in Chicago. The class visited AVMA headquarters on August 11 and heard talks on the work of the Association.

Front row (left to right)—Capt. John S. Zwiers, instructor; Lt. Col. George D. Batcheldor, director of training; Col. Philip R. Carter, commandant; Major Edward P. Hornickel, instructor; Capt. Elmer L. Robinson, instructor.

Second row—Capt. John A. Postle, adjutant; Capt. Lyle K. Miller; Capt. Robert T. Powers; First Lt. William Abel; Second Lt. Philip L. Harrison; Capt. Jack W. Smartt; Capt. William R. Strieber, Instructor.

Back row—Major Glenn A. Washburn, instructor; Capt. Cecil W. Ingmire; Capt. William I. Lipe; Capt. Leonard A. Larson; First Lt. John W. McVicar; Capt. Joe B. Thurman; Major George F. Dixon, instructor.

at Tracy, Minn., specializing in large animal practice until 1945 when he became field veterinarian for the Minnesota State Livestock Sanitary Board. He retired in 1949.

★**Owen H. Cripe** (IND '13), 65, Eureka, Calif., died Jan. 20, 1954. Dr. Cripe, a veteran of World War I, practiced in Indiana for nine years. Since 1930, he was employed by the Department of Agriculture, State of California. He was a member of the California Veterinary Medical Association, the AVMA, and the Masonic Lodge. Dr. Cripe is survived by his widow.

★**Asa H. Davison** (TH '16), 63, Urbana, Ill., died June 27, 1954. Dr. Davison had been Champaign County veterinarian. He was a member of the Illinois Veterinary Medical Association and was admitted to the AVMA in 1917.

★**Herman M. Eisenlohr** (GR '12), 75, Larimore, N. Dak., died April 11, 1954, from injuries received in an automobile accident. In 1953, Dr. Eisenlohr was honored by the Larimore Commercial Club for his forty-two years of service to the Larimore community. He was a member of the North Dakota Veterinary Medical Association and had maintained membership in the AVMA since 1912.

★**Clarence L. Elliott** (ISC '02), 77, Kansas City, Mo., died April 20, 1954. Dr. Elliott had served as a meat inspector for the U. S. Bureau of Animal Industry until his retirement five years ago when he became an inspector for the Kansas City Health Department. Dr. Elliott was a member of the National Association of Federal Veterinarians and of the AVMA.

★**Hugh C. Graham** (OVC '14), 64, Mason, Mich., died April 4, 1954. Dr. Graham was a general practitioner. He was a member of the Michigan State Veterinary Medical Association and of the AVMA.

Abram Holman (MCK '11), 65, Millerstown, Pa., died March 29, 1954. Dr. Holman, a general practitioner, had retired in 1953.

Jasper E. Jennings (KCV '07), Festus, Mo., died April 7, 1954. Dr. Jennings was a general practitioner.

Alfred B. Jorgenson (ONT '08), 73, Kewaskum, Wis., died March 8, 1954. He had practiced in Antigo, Wis., almost forty years and had moved to Kewaskum in 1952 when he retired.

★**John H. Kintner** (UP '17), 62, College Park, Md., died Aug. 28, 1954. Dr. Kintner was a member of the AVMA. An obituary appears on page 342 of this JOURNAL.

Donald O. Kitchen (ISC '33), 47, Greenville, S. Car., died March 27, 1954. Dr. Kitchen was a member of the South Carolina Veterinary Medical Association and had been a member of the AVMA.

★Indicates members of the AVMA.

Albie W. Korinek (ONT '10), Portland, Ore., died recently (date unknown). Dr. Korinek had served in the Agricultural Marketing Service of the U. S. Department of Agriculture.

Robert McKinnon, Jr. (CVC '12), 62, Hiawatha, Utah, died in 1953. Dr. McKinnon was a member of the Utah Veterinary Medical Association and had been a member of the AVMA.

★**Carl J. Norden, Sr.** (KCV '11), 65, Lincoln, Neb., died Aug. 21, 1954. Dr. Norden was admitted to the AVMA in 1911. An obituary appears on page 342 of this JOURNAL.

George T. Reaugh (KSC '16), 61, Oklahoma City, Okla., died of a heart attack on July 15, 1954. Dr. Reaugh had been living in Oklahoma City continuously since 1938 as a member of the Oklahoma City-federal meat inspection service. He is survived by a daughter, one sister, and one grandson.

Robert Rives (OVC '92), 85, East St. Louis, died June 19, 1954. He organized, in 1913, the Corn Belt Serum Company, now the Corn Belt Laboratories, with his son-in-law, Dr. A. E. Bott, as president. Dr. Rives has been an honorary member of the Illinois Veterinary Medical Association since 1941. He had been a member of the AVMA.

Egbert W. Robinson (KCV '14), 62, Bellows Falls, Vt., died May 14, 1954. Dr. Robinson had practiced in Bellows Falls for forty years and had served a number of years on the State Board of Veterinary Registration and Examination, of which he had been chairman. He had also served several years as a village trustee and was an active member of various professional organizations. He had been for many years a member of the AVMA. Dr. Robinson is survived by his widow, two sons, and six grandchildren.

★**Arthur P. Smith** (MO '53), 26, Omaha, Neb., died July 30, 1954, at Denver, Colo. At the time of his death, he was in the Veterinary Corps of the U. S. Army and was stationed at Omaha. Dr. Smith was a member of the AVMA.

Arnost Sonnenschein (BRU '22), Los Angeles, Calif., died June 29, 1954. Dr. Sonnenschein was employed by the U.S.D.A. Agricultural Research Service.

Columbus W. Tittle (CVC '13), 63, Muskogee, Okla., died July 20, 1954. Dr. Tittle was a general practitioner.

John W. Treman (COR '05), 70, Salt Lake City, Utah, died March 3, 1954. Dr. Treman served with the U. S. Bureau of Animal Industry a number of years, and prior to his death was in general practice. He was a member of the Utah Veterinary Medical Association, the Intermountain Livestock Sanitary Association, and had been a member of the AVMA.

American Veterinary Medical Association

Official Roster, 1954-1955

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N. R. Brewer, Physiology Bldg., University of Chicago, Chicago 37, Ill.

Jules S. Cass, Kettering Laboratory, College of Medicine, Eden Ave., Cincinnati 19, Ohio.

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J. A. Henderson, Ontario Veterinary College, Guelph, Ont.

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Program*

(Ex Officio)

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*Pursuant to article XII, section I, part 4, of the Administrative By-Laws, as amended at the Seventy-Eighth Annual Meeting.

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National Research Council (Division of Biology and Agriculture).—E. F. Waller, Department of Animal and Poultry Industry, University of Delaware, Newark, Del. (1957).

National Research Council, Division of Medical Sciences.—W. A. Hagan, New York Veterinary College, Ithaca, N. Y. (1956).

National Society for Medical Research.—W. T. S. Thorp, School of Veterinary Medicine, University of Minnesota, University Farm, St. Paul 1, Minn. (1955).

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United States Pharmacopoeial Convention.—David K. Detweiler, 48 Sproul Rd., Broomall, Pa. (1960).

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Virgin Islands.—R. Von Decken-Luers, c/o Antilles School, St. Thomas.

COMING MEETINGS

Notices of Coming Meetings must be received by 4th of month preceding date of issue

Missouri, University of. Short course for veterinarians. School of Veterinary Medicine, University of Missouri, Columbia, Mo., Oct. 4-5, 1954. Cecil Elder, chairman.

Purdue University. Annual short course for veterinarians. Department of Veterinary Science, Purdue University, Lafayette, Ind., Oct. 6-8, 1954. L. M. Hutchings, chief veterinarian.

Wisconsin, University of. Postgraduate conference for veterinarians. University of Wisconsin, Madison, Wis., Oct. 7-8, 1954. C. A. Brandly, chairman, Department of Veterinary Science.

New England Veterinary Medical Association. Annual meeting, New Ocean House, Swampscott, Mass., Oct. 7-9, 1954. C. Lawrence Blakely, 180 Longwood Ave., Boston 15, Mass., secretary.

Central Indiana Veterinary Medical Association. Second annual small animal seminar. Hotel Marott, Indianapolis, Ind., Oct. 13, 1954. L. M. Borst, 3315 Shelby St., Indianapolis, Ind., secretary.

Pennsylvania State Veterinary Medical Association. Annual meeting. Pocono Manor Inn, Pocono Manor, Pa., Oct. 13-15, 1954. R. C. Snyder, Walnut St. and Copley Rd., Upper Darby, Pa., secretary.

Eastern Iowa Veterinary Association. Annual meeting. Montrose Hotel, Cedar Rapids, Iowa, Oct. 14-15, 1954. Wayne H. Thompson, Earlville, Iowa, secretary.

South Dakota Veterinary Medical Association. Annual meeting. Cataract Hotel, Sioux Falls, S. Dak., Oct. 14-15, 1954. J. L. Noordsy, Marion, S. Dak., secretary.

Southern Veterinary Medical Association. Annual meeting. Geo. Vanderbilt and Battery Park Hotels, Asheville, N. Car., Oct. 18-20, 1954. H. L. Seelig, 111 Broadway, Asheville, N. Car., publicity chairman.

Department of Health, Education, and Welfare, in coöperation with the journal, *Antibiotics and Chemotherapy*. Symposium on Antibiotics. Washington, D. C., Oct. 20-22, 1954. Henry Welch, chairman.

Illinois, University of. Annual veterinary conference and short course. College of Veterinary Medicine, University of Illinois, Urbana, Ill., Oct. 21-22, 1954. L. E. Boley, chairman.

Mississippi Valley Veterinary Medical Association. Annual meeting. Pere Marquette Hotel, Peoria, Ill., Oct. 27-28, 1954. William L. Beer, 612 N. College Ave., Aledo, Ill., secretary.

Interstate Veterinary Medical Association. Annual meeting. Martin Hotel, Sioux City, Iowa, Oct. 28-29, 1954. K. W. Smith, 510 West 19th St., Sioux City, Iowa, secretary.

West Virginia Veterinary Medical Association. Annual meeting. Hotel Morgan, Morgantown, W. Va., Oct. 31-Nov. 1, 1954. Elvin R. Coon, 346 Capitol Building, Charleston 5, W. Va., secretary.

New York State College of Agriculture at Cornell University. Annual nutrition conference for feed manufacturers. Statler Hotel, Buffalo, N. Y., Nov. 4-5, 1954. M. L. Scott, Rice Hall, Cornell University, Ithaca, N. Y., chairman.

Southwest Veterinary Medical Symposium. New Hilton Hotel, Fort Worth, Texas, Nov. 5, 1954. Drue S. Ward, 2816 W. Lancaster, Fort Worth 7, Texas, program chairman.

U. S. Livestock Sanitary Association. Annual meeting. Hotel Fontenelle, Omaha, Neb., Nov. 10-12, 1954. R. A. Hendershott, 1 West State Street, Trenton 8, N. J., secretary.

American Animal Hospital Association (regional) and Midwest Small Animal Association. Hotel Burlington, Burlington, Iowa, Nov. 10-11, 1954. J. Porter Coble, 2828 S. MacArthur Blvd., Springfield, Ill., secretary.

Animal Care Panel. Annual meeting. Thorne Hall, Northwestern University, Chicago Campus, Chicago, Ill., Dec. 1-2, 1954. N. R. Brewer, 951 East 58th St., Chicago 37, Ill.

Nebraska State Veterinary Medical Association. Annual meeting. Hotel Cornhusker, Lincoln, Neb., Dec. 1-3, 1954. W. T. Spencer, 1250 North 37th Street, Lincoln, Neb., secretary.

Armed Forces Institute of Pathology. Short Course. Armed Forces Institute of Pathology,

(*Continued on p. 26*)

Vitamin deficiencies may be overlooked

Photo above shows encrustations at corners of mouth and granular condition of eyelids in pantothenic acid deficient chick.

Photo at left shows dermatitis about feet and hocks, and cracks between the toes. *Photographs, courtesy of Michigan State College.*

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(COMING MEETINGS—*continued from p. 24*)

Washington 25, D. C., Dec. 6-10, 1954. Brig. Gen. Elbert DeCoursey, M.C., U. S. Army, director.

New York State Veterinary College. Annual conference for veterinarians. New York State Veterinary College, Cornell University, Ithaca, N. Y., Jan. 5-7, 1955. W. A. Hagan, dean.

Ohio State Veterinary Medical Association. Annual meeting. Deshler-Hilton Hotel, Columbus, Ohio, Jan. 5-7, 1955. William S. Konold, 50 East Broad Street, Columbus 15, Ohio, executive secretary.

Kansas Veterinary Medical Association. Annual convention. Town House Hotel, Kansas City, Kan., Jan. 6-8, 1955. K. Maynard Curts, 70 Central Ave., Kansas City 18, Kan., secretary.

Tennessee Veterinary Medical Association. Annual meeting. Knoxville, Tenn., Jan. 9-11, 1955. H. W. Hayes, 734 Broadway, North East, Knoxville, Tenn., secretary.

Indiana Veterinary Medical Association. Annual meeting. Hotel Severin, Indianapolis, Ind., Jan. 12-14, 1955. W. W. Garverick, Zionsville, Ind., secretary.

Ontario Veterinary Association. Annual meeting. King Edward Hotel, Toronto, Ont., Jan. 13-15, 1955. G. A. Edge, Box 37, Postal Station F, Toronto 5, Ont., secretary.

Intermountain Veterinary Medical Association. Annual meeting. Hotel Utah, Salt Lake City, Utah, Jan. 17-19, 1955. Wayne Binns, 555 N. Third St. E., Logan, Utah, secretary.

Iowa Veterinary Medical Association. Annual meeting. Hotel Fort Des Moines, Des Moines, Iowa, Jan. 18-20, 1955. F. B. Young, Waukee, Iowa, executive secretary.

Minnesota State Veterinary Medical Society. Annual meeting. Hotel Nicollet, Minneapolis, Minn., Jan. 24-26, 1955. B. S. Pomeroy, School of Veterinary Medicine, University of Minnesota, St. Paul 1, Minn., secretary.

Maryland State Veterinary Medical Association. Annual winter meeting. Lord Baltimore Hotel, Baltimore, Md., Jan. 27-28, 1955. John D. Gadd, Cockeysville, Md., secretary.

American Animal Hospital Association. Annual meeting. Hotel Statler, Detroit, Mich., May 4-7, 1955. Wayne H. Riser, Skokie, Ill., executive secretary.

American Veterinary Medical Association. Annual meeting. Municipal Auditorium, Minneapolis, Minn., Aug. 15-18, 1955. J. G. Hardenbergh, 600 S. Michigan Ave., Chicago 5, Ill., executive secretary.

Foreign Meetings

Pan-African Days for Zootechnology. First meeting. Algiers, Algeria, Oct. 17-23, 1954. R. Camov, 3 Rue Péllissier, Algiers, Algeria, general secretary of the Societe Veterinaire de Zootechnie D'Algerie.

(*Continued on p. 28*)

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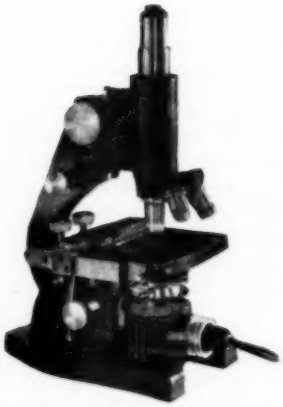

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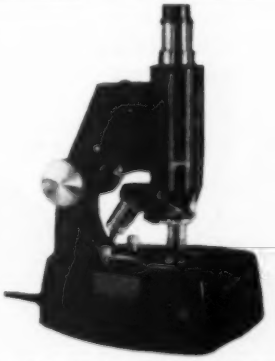

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(COMING MEETINGS—*continued from p. 26*)

Regularly Scheduled Meetings

Atlanta Veterinary Society, the first Tuesday of every month. C. L. Bromley, Jr., 1634 Northside Dr., Atlanta Ga., secretary.

Baltimore City Veterinary Medical Association, the second Thursday of each month, September through May (except December), at 9:00 p.m. at the Park Plaza Hotel, Charles and Madison Streets, Baltimore, Md. Victor I. Sorgen, 133 Wiltshire Rd., Baltimore 21, Md., secretary.

Bay Counties Veterinary Medical Association, the second Tuesday of each month. George W. Eberhart, El Cerrito, Calif., secretary.

Cedar Valley Veterinary Association, the second Monday of each month, except July and August, at Black's Tea Room, Waterloo, Iowa. D. A. Buchanan, Grundy Center, Iowa, secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. Herbert Piper, 4990 Ventura Ave., Fresno, Calif., secretary.

Central Carolina Veterinary Medical Association, the second Wednesday of each month at 7:00 p.m. in the O'Henry Hotel in Greensboro. Dr. J. S. Ellis, 2450 Battleground Ave., Greensboro, N. Car., secretary.

Central Indiana Veterinary Medical Association, the second Wednesday of each month. L. M. Borst, 3315 Shelby St., Indianapolis, Ind., secretary.

Chicago Veterinary Medical Association, the second Tuesday of each month. Wayne H. Riser, 5335 Touhy Ave., Skokie, Ill., secretary.

Coastal Bend Veterinary Association (Texas), the second Wednesday of each month. J. E. Hoban, 4301 S. Port Ave., Corpus Christi, Texas, secretary.

Coon Valley Veterinary Association, the second Wednesday of each month, September through May, at the Bradford Hotel, Storm Lake, Iowa. J. R. Rosdail, Pomeroy, Iowa, secretary.

Cuyahoga County (Cleveland, Ohio) Veterinary Medical Association, the first Wednesday of each month—September through May (except January)—at 9:00 p.m. at the Carter Hotel, Cleveland, Ohio. Roger W. Grundish, 4217 Mayfield Road, South Euclid 21, Ohio, secretary.

East Bay Veterinary Medical Association, bimonthly, the fourth Wednesday. Robert Clemens, 23352 Orchard, Hayward, Calif., secretary.

Eastern Illinois Veterinary Medical Association, the first Thursday of March, June, September, and December. A one-day clinic is held in May. L. E. St. Clair, College of Veterinary Medicine, University of Illinois, Urbana, Ill., secretary.

(*Continued on p. 30*)

Finest Buy Ever!

NEW "LIFE TIME" STAINLESS STEEL VETERINARY TABLE

$129.50

f.o.b. Morenci

Now you can have a new "Life Time" Stainless Steel Table at lowest cost possible. New exclusive features guarantee the greatest value offered in a combination Operating and Examination Table.

Patented "Corner Compensators" on base positively eliminate wobble and uneveness of table (corrects up to ⅜" per corner). Each compensator has a quarter ton capacity, and insures a 37" height operating level. Cast rectangular steel base covers greater area for proper balance and stability.

Mirror finish stainless steel top is reinforced, sanitary, and everlastingly attractive. Combination of stainless steel top and triple chrome-plated steel parts promises "life time" service. Materials and workmanship are fully guaranteed.

STANDARD MODEL — Stainless Steel Top, Black Enamel Base, Chrome-plated Column **$129.50**

DELUXE MODEL — Stainless Steel Top, Chrome-plated Base, Chrome-plated Column **$149.50**

(Prices subject to change without notice)

TED STOCKWELL MFG. CO.
Table Division (NA)
Morenci, Michigan

Ship at once by freight, f.o.b. Morenci, one "Life Time" Stainless Steel Top Table as indicated below:

☐ Standard — $129.50 ☐ Deluxe — $149.50

☐ CASH remittance in full, less 5% for cash

☐ C.O.D. (25% down payment required)

NAME_____

STREET ADDRESS_____

CITY_____ STATE_____

NEW EXCLUSIVE FEATURES

- ★ Reinforced all stainless steel top.
- ★ Patented "Corner Compensators" automatically levels table on any floor.
- ★ Positive locking adjustment in twelve positions from five to eighty-five degrees.
- ★ Extra large 24" x 60" top surface.
- ★ Chrome-plated single pedestal column.
- ★ Hardware of chrome-plated brass.
- ★ Rounded corners on table top — all obstructions eliminated.
- ★ Chrome-plated spring steel tie rods with polished aluminum adjustable ties.
- ★ Designed for maximum efficiency. Combines advantages of split or vertical top table.
- ★ Top tilts to vertical position for storage in small area.

AVAILABLE FROM YOUR FAVORITE SUPPLIER

IMMEDIATE SHIPMENT OF BOTH MODELS

Bank reference: First State Savings Bank, Morenci, Mich.

(COMING MEETINGS—*continued from p. 28*)

Eastern North Carolina Veterinary Medical Association, the first Friday of each month, time and place specified monthly. C. B. Randall, Kinston, N. Car., secretary.

Fayette County Veterinary Association, Iowa, the third Tuesday of each month, except in July and August, at Pa and Ma's Restaurant, West Union, Iowa. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Florida, North-East Florida Veterinary Medical Association, the second Thursday of each month, time and place specified monthly. J. O. Whiddon, 829 San Marco Blvd., Jacksonville, Fla.

Greater St. Louis Veterinary Medical Association, the first Friday of the month (except July and August) at the Sheraton Hotel, Spring Ave. and Lindell Blvd. Luther E. Fredrickson, Room 11, Municipal Courts Bldg., St. Louis, Mo., secretary.

Houston Veterinary Medical Association, Houston, Texas, the first Thursday of each month. Edward Lepon, Houston, Texas, secretary-treasurer.

Illinois Valley Veterinary Medical Association, the second Sunday evening of even-numbered months at the Jefferson Hotel, Peoria, Ill. S. M. McCully, Lacon, Ill., secretary.

Indiana Tenth District Veterinary Medical Association, third Thursday of each month. L. A. Snider, New Palestine, Ind., secretary.

Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday evening of each month, in Louisville or within a radius of 50 miles. Dr. W. E. Bewley, P.O. Box "H", Crestwood, Ky., secretary.

Kansas City Small Animal Hospital Association, the first Monday of each month, at the Hotel Continental. J. A. Zacher, 3632 Main St., Kansas City, Mo., secretary.

Kansas City Veterinary Medical Association, the third Tuesday of each month, at the Exchange Hall, Ninth Floor, Livestock Building, 1600 Genesee, Kansas City, Mo. J. C. Davis, 7332 Canterbury St., Kansas City 13, Mo., secretary.

Kern County Veterinary Medical Association, the first Thursday of each month. R. A. Stiern, 17 Niles St., Bakersfield, Calif., secretary.

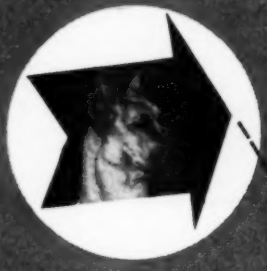
Keystone Veterinary Medical Association, the Philadelphia County Medical Society Building, 301 S. 21st Street, Philadelphia, Pa., on the fourth Wednesday of each month. Raymond C. Snyder, 39th and Woodland Ave., Philadelphia 4, Pa., secretary.

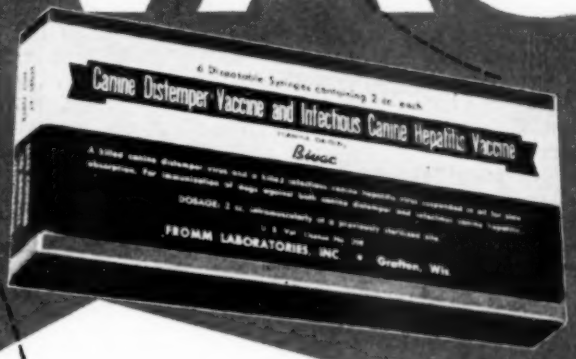
Kyowva Veterinary Medical Association, the

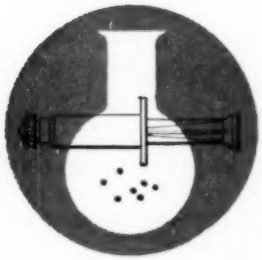
(*Continued on p. 32*)

another Fromm **first**

BIVAC







- A safe one-dose vaccine for the immunization of dogs against both canine distemper and infectious canine hepatitis.
- A killed canine distemper virus and a killed infectious canine hepatitis virus suspended in oil for slow absorption.
- Supplied in convenient 2 cc. disposable plastic syringes.
- DOSAGE: 2 cc. intramuscularly at a previously sterilized site.

Sold only to Qualified Graduate Veterinarians

Available in one dose and six dose packages.

FROMM LABORATORIES, INC.

Grafton, Wisconsin, U. S. A.

CONTACT YOUR LOCAL INDEPENDENT DISTRIBUTOR

second Thursday of each month in the Hotel Prichard, Huntington, W. Va., at 8:30 p.m. Karl Mayer, 1531 Fourth Ave., Huntington, W. Va., secretary.

Maricopa County Veterinary Association, the second Tuesday of each month. Charles J. Prchal, 1722 East Almeria Road, Phoenix, Ariz., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from September through May, at the Academy of Medicine of Northern New Jersey, 91 Lincoln Park South, Newark, N. J. Myron S. Arlein, 2172 Millburn Ave., Maplewood, N. J., secretary.

Michiana Veterinary Medical Association, the second Thursday of each month, at the Hotel LaSalle, South Bend, Ind. Paul W. Hough, 829 Bryan St., South Bend, Ind., secretary.

Michigan, Southeastern Veterinary Medical Association, the second Thursday of every month, September through May. Gilbert Meyer, 14003 E. Seven Mile Road, Detroit 5, Mich., secretary.

Mid-Coast Veterinary Medical Association, the first Thursday of every even month. George McCollister, 2146 Broad St., San Luis Obispo, Calif., secretary.

Milwaukee Veterinary Medical Association, the third Tuesday of each month, at the Half-Way House, Blue Mound Rd. George F. Lynch, 201 West Devon St., Milwaukee 17, Wis., secretary.

Mobile-Baldwin Veterinary Medical Association, the first Tuesday of each month at the Hotel Admiral Simmes, Mobile, Ala. C. Eric Kennedy, Mobile, Ala., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. Lewis J. Campbell, 66 Marion Ave., Salinas, Calif., secretary.

New Castle County (Del.) Veterinary Association, the first Tuesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. Arthur P. Coogan, 2102 New Road, Wilmington 5, Del., secretary.

New York City, Veterinary Medical Association of, the first Wednesday of each month at the New York Academy of Sciences, 2 East 63rd St., New York City. C. E. DeCamp, 43 West 61st St., New York 23, N. Y., secretary.

Northern Colorado Veterinary Medical Association, the second Monday of each month. William D. Carlson, P.O. Box 478, Fort Collins, Colo., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday evening from September through June, at the Casa Mana Restaurant, Cedar Lane, Teaneck, N. J. Robert R. Shomer, 1680 Teaneck Road, N. J., secretary.

(*Continued on p. 34*)

Modern Nutrition now helps Both

SINCE WE LOVE our pets, as well as our children, we want them to share in the benefits of our increased knowledge of nutrition.

That's why so many depend on Friskies—this *proven* formula provides every food element dogs are known to need.

50 YEARS' EXPERIENCE IN ANIMAL NUTRITION. The Friskies formula has been tested with dogs of all types at the Friskies Research Kennels on the famous Carnation Milk Farms.

FRISKIES MEAL is rich in meat protein and far more nourishing than meat alone. Its 19 individual ingredients blended into a true-type meal give your dogs an economical, balanced diet at every meal. Dogs love its "meaty" taste.

FRISKIES CUBES is the same famous formula as Friskies Meal . . . in crunchy, bite-size form that provides exercise for teeth and gums. And you feed as is—no mixing required. There's nothing to add—not even water.

EITHER FORM of Friskies is available wherever dog foods are sold. Start your dogs on Friskies today.

2, 5, 10, 25 and 50 lb. sizes

Friskies

PRODUCED BY THE MAKERS OF **CARNATION MILK**

ALBERS MILLING COMPANY DIV. OF CARNATION COMPANY, LOS ANGELES 36, CALIF.

(COMING MEETINGS—*continued from p. 32*)

Northern San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month. Tom Hagan, Gen. Del., Escalon, Calif., secretary.

Oklahoma County Veterinary Medical Association, the second Wednesday of every month except August and July. R. J. Keller, 1701 N. Highland Drive, Oklahoma City, Okla., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month at 7:00 p.m. in the Antlers Hotel, San Bernardino, Calif. William J. Kelber, 1111 West A St., Ontario, Calif., secretary.

Orange County Veterinary Medical Association, bi-monthly. Donald E. Lind, 2643 N. Main, Santa Ana, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. P. H. Hand, Box 1035, Millbrae, Calif., secretary.

Piedmont Veterinary Medical Association, the last Friday of each month at 7:00 p.m. in Mull's Motel in Hickory, N. Car. G. V. McCranie, Hickory, N. Car., secretary.

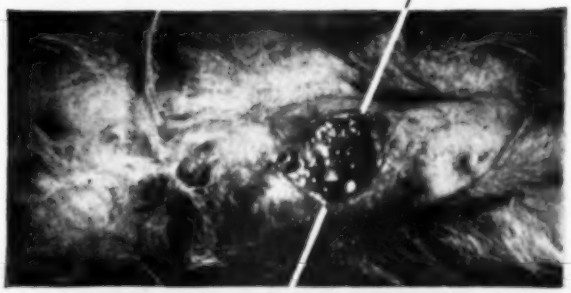
(*Continued on p. 36*)

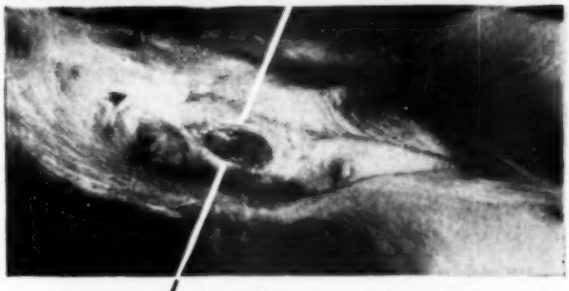
For large and small animals

TRYPTAR *vet*

ARMOUR

for selective physiological debridement of necrotic tissue





Tryptar rapidly dissolves fibrinous strands, surface coagula and clotted blood of necrotic lesions. The purulent exudate and necrotic tissue is also attacked. When the necrotic tissue has been penetrated, serum starts to flow from adjacent healthy tissue, floating away the digested debris. The exudate becomes serous and normal appearing leukocytes replace pathological leukocytes. With continued treatment exudation gradually ceases and fresh, healthy granulation tissue appears.

TRYPTAR vet (Armour) may be used whenever debridement or removal of necrotic tissue is desired. It has been found to be effective in the following conditions:

- Osteomyelitis
- Surface ulcers
- Soft tissue abcesses
- Foot rot (bovine)
- Paranasal sinusitis
- Suppurative bursitis (fistulous withers)
- Suppurative arthritis
- Foot canker (equine)
- Purulent and gangrenous mastitis
- Pyometra and metritis
- Suppurative otitis
- Infected compound fractures
- Infected amputation stumps

Package information: TRYPTAR vet (Armour) is supplied as a white crystalline powder in vials containing 200,000 Armour units. It is stable indefinitely in dry form at room temperature.

ARMOUR

VETERINARY LABORATORIES

A Division of Armour and Company

520 N. Michigan Ave., Chicago 11, Ill.

(COMING MEETINGS—*continued from p. 34*)

Pima County (Arizona) Veterinary Medical Association, the third Wednesday of each month, in Tucson. R. W. Adami, 2103 S. 6th Ave., Tucson, Ariz., resident secretary.

Portland (Oregon) Veterinary Medical Association, the second Tuesday of each month, in the Auditorium of the Upjohn Company. Victor T. Oliver, 9705 S.W. Barbur Blvd., Portland 19, Ore., secretary.

Redwood Empire Veterinary Medical Association, the third Thursday of each month. H. M. Strandberg, 203 D St., Petaluma, Calif., secretary.

Sacramento Valley Veterinary Medical Association, the second Wednesday of each month. S. M. Foster, 430 College, Woodland, Calif., secretary.

Saginaw Valley Veterinary Medical Association, the last Wednesday of each month. F. Ferguson, 1702 S. Dort Highway, Flint, Mich., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month except July and August. E. R. Quortrup, 4005 Rosecrans St., Building 2, San Diego, Calif., secretary.

San Fernando Valley (California) Veterinary Medical Association, the second Friday night of each month at Eaton's Restaurant in Studio City, Calif. Howard C. Taylor, 2811 W. Olive Ave., Burbank, Calif., secretary.

Santa Barbara-Ventura Counties Veterinary Medical Association, Friday evenings every sixth week. Dee Wodars McDermott, 5879 Hollister, Coleta, Calif., secretary.

Seattle Veterinary Medical Association, the third Monday of each month in the home of Dr. Fred Cummings, 5828-5th, N.W., Seattle, Wash.

Southern California Veterinary Medical Association, the third Wednesday of each month. Rankin W. McIntyre, 203 Administration Building, Union Stockyards, Los Angeles, Calif., secretary.

South Florida Veterinary Society, the third Tuesday of each month, at the Seven Seas Restaurant, Miami, Fla. E. A. Majilton, 1093 N. E. 79th St., Miami, Fla., secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month, in Director's Parlor of the Brookside State Bank, Tulsa, Okla. John Carnes, Muskogee, Okla., secretary.

new antibacterial agent:

for avian salmonelloses: for typhoid, pullorum and paratyphoids of chickens and turkeys

FUROXONE®

brand of furazolidone

Furoxone, one of the antimicrobial nitrofurans is now available to veterinarians for the treatment of avian salmonelloses caused by Salmonella species including gallinarum, pullorum and typhimurium. Furoxone is administered in the feed at the prophylactic level of 0.0055% (2.5 Gm./100 lbs.) or at the curative level of 0.011% (5 Gm./100 lbs.).

In the study on turkey poults experimentally infected with S. gallinarum, Furoxone reduced the mortality to zero, compared to 85 to 90% mortality among untreated controls.[1]

In chickens experimentally infected with S. gallinarum, Furoxone held deaths to a level of 0 to 3%, as compared to 70% mortality among untreated controls.[2]

In a field study on over 10,000 chickens and 7,000 turkeys with high mortality rates from epizootics of typhoid (S. gallinarum), Furoxone reduced the mortality to approximately 7% and 2% respectively.[3]

Studies to be published reveal comparable effectiveness of Furoxone against S. pullorum in chickens and S. typhimurium in turkeys.

1. Grumbles, L. C., Wills, F. K., and Boney, W. A.: J. Am. Vet. M. A. **124**: 217, 1954. 2. Smith, H. W.: Vet. Rec. **66**: 215, 1954. 3. Cosgrove, A. S.: Vet. Med. In press.

Furoxone is available as *Furoxone Concentrate Veterinary* containing Furoxone 5.88% (5 Gm./3 oz. excipient) in cartons of 3 oz. and 30 oz.

EATON LABORATORIES
NORWICH, NEW YORK

Exclusive distributors to the veterinary profession:

U.S.A.	**Canada**
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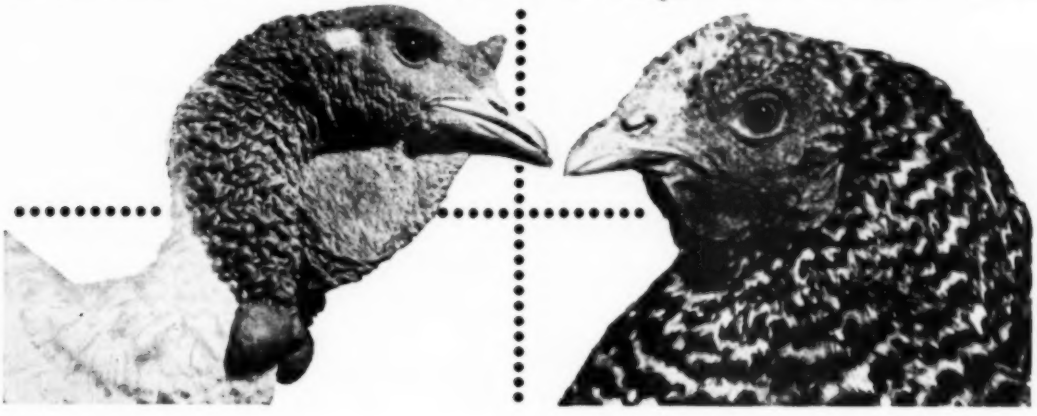
Literature to veterinarians on request.

THE **NITROFURANS**—A UNIQUE CLASS OF ANTIMICROBIALS PRODUCTS OF EATON RESEARCH



CLASSIFIED ADVERTISEMENTS

Twenty-five words or less, $2.50; 8 cents for each additional word. Replies sent in care of the JOURNAL, 25 cents extra.

Remittance must accompany order.

Deadline for want ads 8th of month preceding date of issue.

Names of classified advertisers using key letters can not be supplied. Address your reply to the key letters, c/o JOURNAL of the AVMA, 600 S. Michigan Ave., Chicago 5, Ill., and it will be transmitted to the advertiser.

Wanted—Veterinarians

Veterinarian wanted as assistant in small animal practice. License in Virginia required. Salary plus percentage. Address "Box D 1," c/o JOURNAL of the AVMA.

Experienced veterinarian wanted for 1 year to conduct mixed practice with small animal hospital in Middlewest. Purchase drugs and lease completely furnished. Option to re-lease or purchase part or all. Established practice; $2,500 will handle to start. Address "Box D 10," c/o JOURNAL of the AVMA.

Assistant wanted for mixed practice in Nebraska; $400 for three months; commission or percentage if satisfactory. Permanent arrangement end of 1 year. You furnish car. Address "Box D 11," c/o JOURNAL of the AVMA.

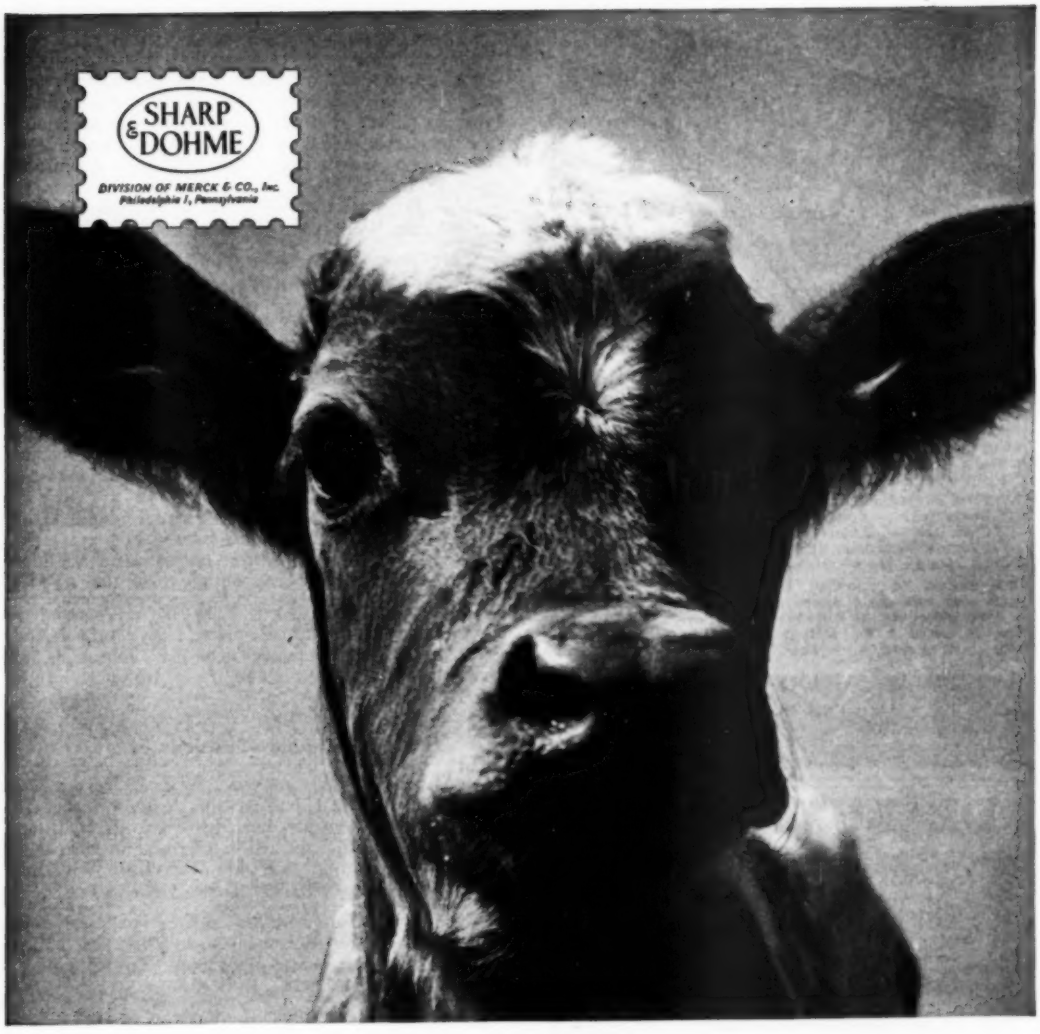
Opportunity for veterinarian with Connecticut license and some capital to establish himself, build up his own practice, and buy into a hospital; near New York state line. Address "Box D 21," c/o JOURNAL of the AVMA.

Veterinarian wanted for final work with city meat inspection program in Southwest. Good starting salary. Excellent opportunity for retired BAI inspector or veterinarian desiring to practice part time. Experience preferred. Address "Box E 4," c/o JOURNAL of the AVMA.

Veterinarian wanted for mixed practice in Ohio; excellent opportunity for man willing to accept responsibility. Car furnished; good salary. Address "Box E 15," c/o JOURNAL of the AVMA.

Veterinarian wanted to assist in mixed practice in progressive Ohio community; married or single. Give full details in first letter. Address "Box E 18," c/o JOURNAL of the AVMA.

(*Continued on p. 40*)



Losses from calf scours checked with

SULFATHALIDINE®

PHTHALYLSULFATHIAZOLE

FOR PREVENTION AND TREATMENT—a single daily dose of SULFATHALIDINE is effective in controlling calf scours.

SULFATHALIDINE, administered orally, exerts 95% of its action in the intestinal tract... is minimally absorbed, virtually non-toxic. That means—smaller dosage, lower treatment cost than with the other sulfonamides.

In complicated cases of calf scours, in sheep dysentery and intestinal infections in small animals, administer BOVIMIDE® Triple Sulfonamide Suspension with Kaolin. 2 cc. per lb. of body weight daily will combat infection, check diarrhea.

QUICK INFORMATION: SULFATHALIDINE available in slotted tablets (0.5 Gm. and 4.0 Gm. each) and powder (2.0 Gm. per tsp.). BOVIMIDE supplies in each 100 cc. 6.8 Gm. Sulfathalidine, 0.6 Gm. each of sulfamerazine and sulfamethazine and 10.0 Gm. Kaolin and alcohol 5%. Dosage information on request.

Sharp & Dohme, Veterinary Department.

(CLASSIFIED ADS—*continued from p. 38*)

Job opportunities as state employed veterinarians now exist in Wisconsin's State-Federal Cooperative Program. These civil service positions pay an annual starting salary of $5,472. Permanent locations in many parts of the state are available. Applicants must be United States citizen. Veterinarians are requested to contact the Bureau of Personnel, State Capitol, Madison, 2 Wisconsin.

Veterinarian wanted to conduct small animal practice in Chicago area starting mid-November for one- to three-month-period. State qualifications and salary expected. Address "Box E 19," c/o JOURNAL of the AVMA.

Veterinarian wanted for field position in Nevada. Yearly salary basis. Address inquiry to 1465 Wells Ave., Reno, Nev.

Veterinarian wanted by veterinary research division of major company with widespread livestock interests, for clinical research and service work primarily in diseases of poultry. Must be recent graduate of AVMA-approved school with interest and preferably experience in poultry disease control. Send qualifications to "Box E 25," c/o JOURNAL of the AVMA.

Veterinarian with New York license wanted as assistant in small animal practice on Long Island. State qualifications, salary expected; references required. Address "Box E 30," c/o JOURNAL of the AVMA.

Wanted—Positions

Graduate AVMA-approved school, desires position leading to eventual partnership, lease, or sale. Interned at large eastern hospital; have an additional year small animal experience. Licensed in Massachusetts and California. Available November 1. Address "Box E 2," c/o JOURNAL of the AVMA.

Experienced veterinarian desires position with small animal practitioner in New York State. Married; excellent references. Address "Box E 3," c/o JOURNAL of the AVMA.

Graduate veterinarian, Hannover, Germany, 1948, desires position in eastern states; four years of small animal experience in the United States. Address "Box E 31," c/o JOURNAL of the AVMA.

Experienced Middlewestern large animal practi-

(*Continued on p. 44*)

Nobody—But Nobody—Wants A Runt!

I'm full grown—normal in every way and happy about it. Bloodhounds, especially, have to be normal in size and conformation. Runts lose out on hunts—and owners lose out on runts!

I've got some bloodhound friends in another kennel who aren't as lucky as I. I don't know what they are fed, but it's plain to see that they're not up to par for these parts. Heard their boss talking to my boss about it. He said, "I'm through taking chances on feed. Feed that provides a deficient diet that might retard the skeleton growth of my pups. From now on, I'm feeding what you feed," he said to my owner, "I'm feeding Ken-L-Meal exclusively!"

Smart man, my boss's friend!

Fill one dish with KEN-L-MEAL and a *second* dish with any other dog meal. Watch your dog "sniff" the air and head straight for the KEN-L-MEAL! It's KEN-L-MEAL's *real meat meal aroma* dogs go for! Notice, too, KEN-L-MEAL absorbs water almost instantly—and retains a crumbly, moist texture.

Ken-L-Meal is the profit feed... the economy feed... the best feed for every breed because it's nutritionally complete!

You love dogs, of course, or you wouldn't be in the business.

Pups are fun, raising a champ is a rewarding experience, training and stud services are profitable. But it's still a business—and to stay in business you have to breed to win.

Breeding to win means feeding pups, champs, and stud dogs Ken-L-Meal because what you breed in, Ken-L-Meal will bring out.

That's because Ken-L-Meal not only contains real meat meal, but all the minerals, vitamins, and other nutrients known to be essential to maintain dogs in robust health and peak vigor. All dogs thrive on it—and it's easy on your purse as well. Just a few cents a day feeds a 20-lb. dog.

Ken-L-Meal *in 2- and 5-lb. boxes... 25- and 50-lb. sacks ... at food, feed, and pet stores everywhere.*

Correspondence

Another Life Member Expresses Appreciation

In sending a change of address, Dr. F. N. Elwell (ISC '02) who was made a life member in 1953 recently wrote as follows:

Dear Dr. Hardenbergh:

Following my retirement from the federal service last September, Mrs. Elwell and I have permanently settled in McPherson, Kansas. . . .

It is quite unlikely that I will engage to any extent in veterinary service of the usual types.

I do, however, wish to express my appreciation of the fine work carried on by the Association, also for the privilege of life membership and the receipt of the JOURNAL. .

Very truly yours,
s/F. N. Elwell,
116 N. Charles St., McPherson, Kan.

Jen-Sal Officer Elected Director of Institute

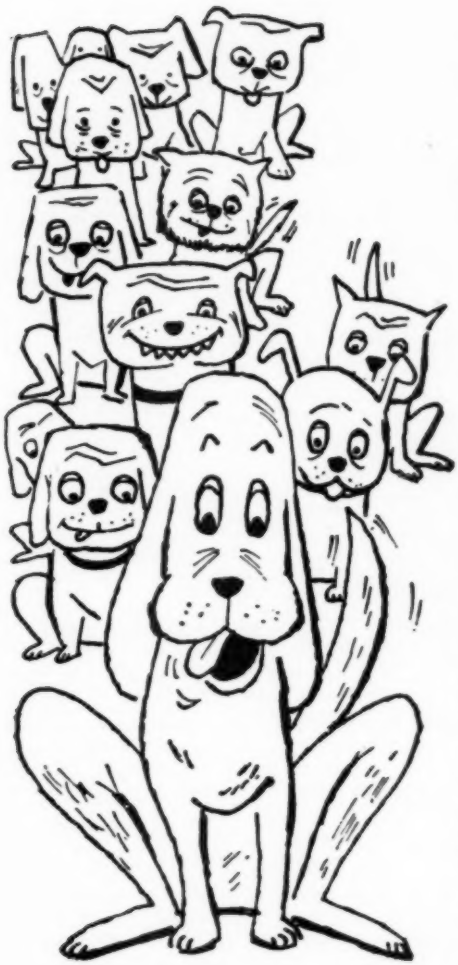
Frederick Wilson, comptroller and treasurer, Jensen-Salsbery Laboratories, Inc., has been elected a director of the Kansas City Control of the Controllers Institute of America.

Established in 1931, the Institute is a nonprofit organization of controllers and finance officers from all lines of business—banking, manufacturing, distribution, utilities, transportation, and others. The total membership exceeds 4,300.

PORTRAITS — James J. Metcalfe

Veterinarian

We think of him as someone who . . . Attends to dogs and cats . . . Prescribes a little medicine . . . And gives them loving pats . . . Who keeps them from distemper and . . . From rabies when they stray . . . And boards our precious animals . . . The weeks we go away . . . But seldom do we realize when . . . We pay his little fee . . . How hard he has to study for . . . His medical degree . . . His knowledge of our horses and . . . Our cows and hogs and sheep . . . And how he serves in peace and war . . . To earn his humble keep . . . And who is there to estimate . . . His everlasting worth . . . As he devotes his life to all . . . God's animals on earth?—*Courtesy of James J. Metcalfe and the Chicago Sun-Times Syndicate, Aug. 8, 1954.*



even the oldest dogs

can be taught this new trick

The Trick: to get dogs consistently to eat *dry* dog food—every last morsel!

Hint: This can be done easily and without fail by feeding Swift's Pard Meal—a new-type dry dog food.

How It's Done: Pard Meal makes eating no trick at all. For every nourishing kernel has *Spice of Life* flavor . . . a FLAVOR THAT DOGS CAN'T RESIST. Thus, you can feed and recommend economical Pard Meal with the assurance that dogs will eat it and *stay* with it!

That's Not All: Pard Meal is every bit as nutritious and well balanced as it is tasty. It contains extra amounts of rich meat fat for bounding energy and fuller nutrition. And it's homogenized—won't flake or powder or turn rancid. Pard Meal is complete—a dog needs nothing more.

Pard Meal with *Spice of Life* flavor is now available at most dealers in 25- and 50-lb. bags and smaller cartons.

PARD is Swift's famous canned dog food. Here is the "pioneer" product of them all—for 20 years leading the way to today's high level of nutritional excellence in commercial dog foods. A dog needs nothing more—you can recommend nothing better than Pard.

NUTRITION IS OUR BUSINESS

Swift & Company

(CLASSIFIED ADS—*continued from p. 40*)

tioner desires position in large practice with possibility of partnership or purchase. Have complete equipment, Married, 35, reliable, capable. Address "Box E 10," c/o JOURNAL of the AVMA.

Recent graduate of AVMA-approved school desires assistantship in small animal or mixed practice with eventual partnership. Age 26, married, draft-exempt. No geographical preference. State stipend offered. Address "Box E 13," c/o JOURNAL of the AVMA.

Pathologist, bacteriologist, knowledge of virology, looking for permanent position with private laboratory. Nine years' experience in research, biologicals, poultry pathology. Married; 34 years old. Give details and salary scale. Address "Box E 16," c/o JOURNAL of the AVMA.

Progressive position in equine or general practice in Kentucky or elsewhere required by licensed graduate veterinarian. Address "Box E 17," c/o JOURNAL of the AVMA.

Experienced veterinarian, trained radiologist and surgeon, wants position in teaching institution, or mixed practice with salary, percentage, and chance of partnership. Graduate of AVMA-approved school, married, veteran. Address "Box E 22," c/o JOURNAL of the AVMA.

Veterinarian desires position in a small animal or general practice in the East. Six years of experience in general practice; age 33, married. Address "Box E 26," c/o JOURNAL of the AVMA.

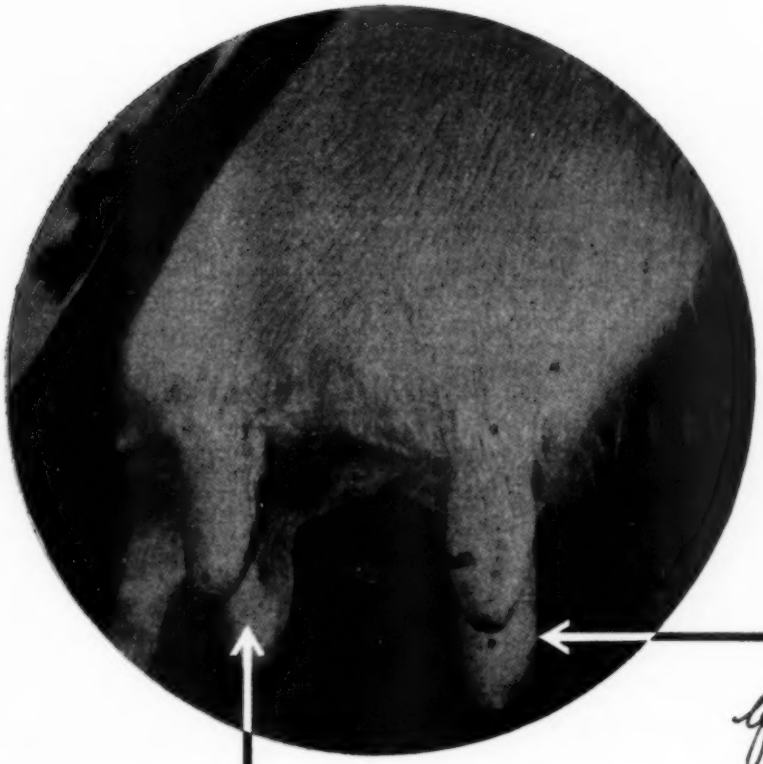
Experienced 1953 graduate desires assistantship in mixed practice in Illinois, Missouri, or Wisconsin. Have car, instruments, and licenses; single, age 30, draft exempt. Address "Box E 27," c/o JOURNAL of the AVMA.

Wanted—Practices

Willing to invest in partnership or outright purchase of minimum 75% small animal practice in New Jersey. Wide experience; capable of full responsibility. Address "Box D 7," c/o JOURNAL of the AVMA.

Veterinarian desires to purchase a small animal practice in the Northeast, preferably New York State. Address "Box E 11," c/o JOURNAL of the AVMA.

(*Continued on p. 46*)



effective outside too...

The successful treatment of common and bothersome surface infections, such as those following chapping or abrasion of the teats, is but a reflection of the strong but safe antibacterial activity and convenience of use now widely attributed to

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NEOMYCIN

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Available singly or in dozens, a very satisfactory dispensing item.

another product of **Upjohn** **Research** *for the veterinarian*

DEPARTMENT OF VETERINARY MEDICINE / The Upjohn Company, Kalamazoo, Michigan

(CLASSIFIED ADS—*continued from p. 44*)

Want to purchase good large animal practice in West or Middlewest. Available immediately. Address "Box E 12," c/o JOURNAL of the AVMA.

Experienced relief veterinarian available; small animals only. New York and New Jersey licenses. Address D.V.M., 1007 80th St., North Bergen, N.J.

Attractive offer of high interest and percentage of gross for 100 per cent financing of purchase of mixed practice and hospital grossing over $15,000. Prefer South; consider others; full details; references. Address "Box E 20," c/o JOURNAL of the AVMA.

For Sale or Lease—Practices

Busy dog and cat hospital for sale; long established, lucrative practice on main thoroughfare in built up area Long Island, N.Y. Modern brick hospital, capacity 75. Ill health compels me to retire. Exceptional opportunity, 1 or 2 veterinarians. Address "Box D 5," c/o JOURNAL of the AVMA.

Remittance must accompany advertisement

Mixed practice for sale in central San Joaquin Valley of California. Young growing practice; 85% large animals. Gross $15,000 first year. Large home on three acres; will sell for value of real estate. Health forces sale. Address "Box E 1," c/o JOURNAL of the AVMA.

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Army service forces sale of Michigan practice; both large and small animals. Take over drug inventory. Address "Box E 32," c/o JOURNAL of the AVMA.

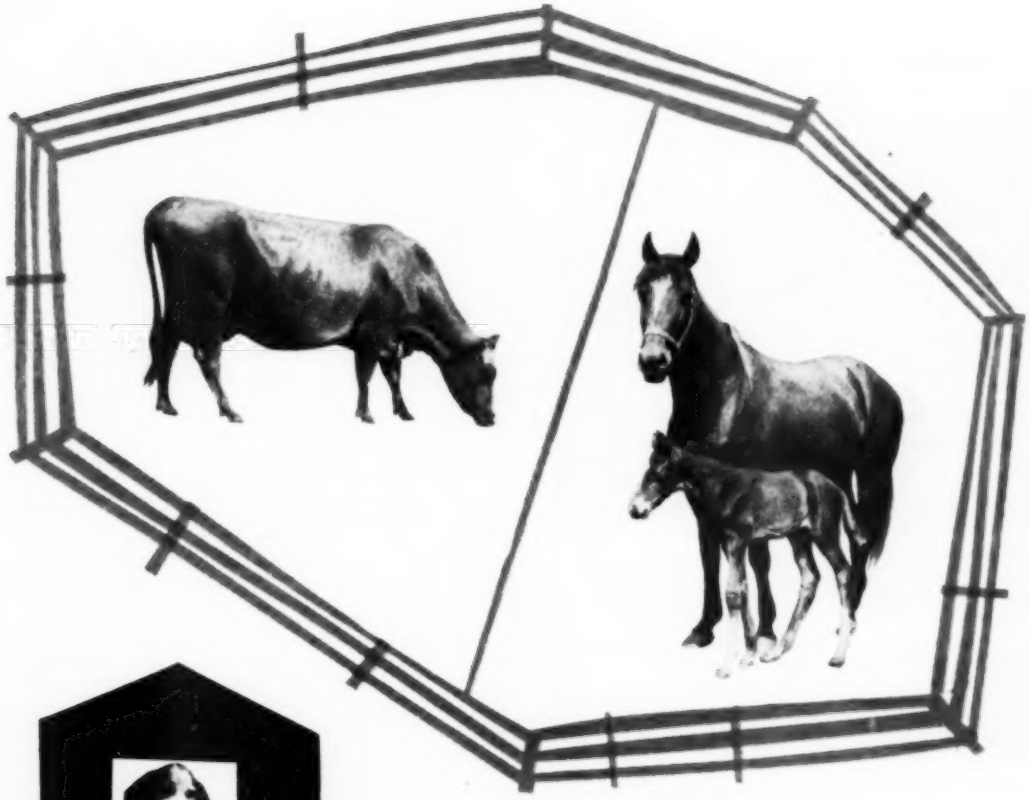
Mixed practice, predominantly dairy, for sale in northern California. Facilities for both large and small animals. Address "Box D 18," c/o JOURNAL of the AVMA.

Established mixed practice for sale in southern city of 75,000; terms can be arranged to suit buyer. Address "Box D 24," c/o JOURNAL of the AVMA.

Small animal established practice for lease in northern California. Modern air-conditioned building; 60 steel cages, animagraph x-ray and equipment included. Gross over $30,000 per year. Address "Box E 5," c/o JOURNAL of the AVMA.

General practice netting $9,000 to $11,000 yearly for sale for cost of real estate. Terms, if necessary. Address Scott Heffner, 251 E. Ross St., Lancaster, Pa.

(*Continued on p. 48*)



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again confirmed clinically in 1,322
large and small animals

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parenteral hemostat

note the conclusions of this 1954 report* on 10 years of use—

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"no incompatibilities, or untoward side effects"

KOAGAMIN, an aqueous solution of oxalic and malonic acids for parenteral use, is supplied in 20-cc. diaphragm-stoppered vials.

*Rachman, M., and Frucht, T. R.: Vet. Med. *49*:341, 1954.

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Modern fully equipped small animal hospital for sale in large Ohio city adjoining wealthy suburbs. Present gross between $36,000 and $40,000. An excellent opportunity for an energetic man. Must sell due to other interests. Address "Box E 7," c/o JOURNAL of the AVMA.

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Completely modern, small animal hospital for sale or lease; 2½ years old. Near city of 60,000 population in Wisconsin. Address "Box E 9," c/o JOURNAL of the AVMA.

Excellently located fully equipped small animal hospital and adjoining new home for sale or lease in fast growing bay area in California. Gross $15,000 yearly; $8,500 down, or lease with option. Must leave due to other interests. Address "Box E 14," c/o JOURNAL of the AVMA.

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Veterinarian's home and completely equipped office for sale. Six rooms plus office space, large barn with box stalls, corrals, permanent pasture, irrigation well. Near Riverside, Calif.; ill health requires selling. $19,000 with $6,000 down. Address Harry M. Slaten, 1412 W. 6th St., Corona, Calif.

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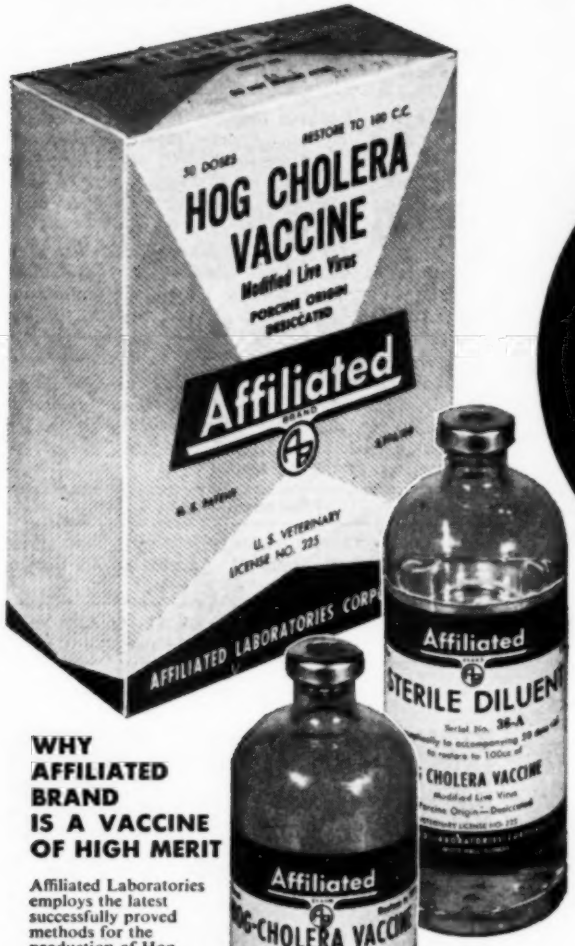
Established small animal practice for sale near thriving Hudson Valley city in New York State; over 13 acres. Sell with or without inventoried equipment, buildings, etc. Excellent opportunity for woman. Address "Box E 23," c/o JOURNAL of the AVMA.

(*Continued on p. 50*)

Biologics Of Merit For Graduate Veterinarians



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Affiliated Laboratories employs the latest successfully proved methods for the production of Hog Cholera Vaccine.

Specific tests are made on every serial of Affiliated Brand Hog Cholera Vaccine for potency, purity, safety, moisture and vacuum. The results of these tests equal or surpass rigid government standards before a drop of Vaccine is sold.

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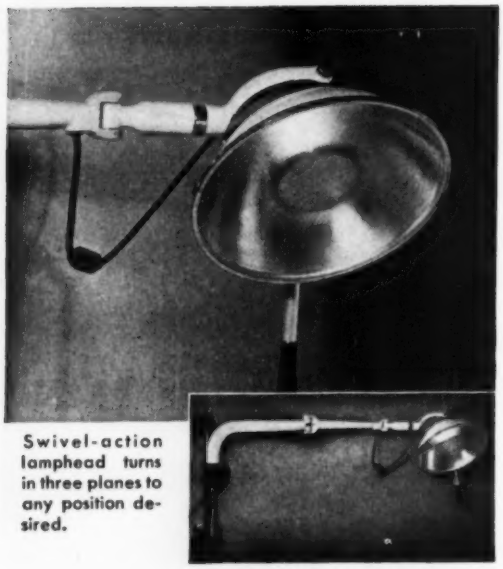

Swivel-action lamphead turns in three planes to any position desired.

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Here is light, right where you need it—without wasting your time with unnecessary adjustments.

Castle No. 26 Veterinary Light moves quickly to *any* position you want . . . sidewise, right or left, up or down. Lamphead moves at your touch, swings on full-turning yoke and 2-jointed arm.

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To see how Castle's Veterinary Light and other equipment can make your work easier, mail coupon below.

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Castle LIGHTS AND STERILIZERS

(CLASSIFIED ADS—*continued from p. 48*)

Small animal practice and equipment for sale or lease in Hollywood, Calif. Established 15 years; real opportunity. Address "Box E 24," c/o JOURNAL of the AVMA.

Growing small animal hospital for sale in Chicago. Modern, newly equipped, x-ray; new sound proof building. No real estate involved; long lease on building. Very moderate price. Moving out of city. Address "Box E 28," c/o JOURNAL of the AVMA.

Small animal hospital near Los Angeles, for sale. No real estate; 40-animal capacity. Gross $26,000; $12,500 cash or $13,500 terms with $5,000 minimum down. Address "Box W 17," c/o JOURNAL of the AVMA.

Mixed practice for sale; 80% dairy, 20% dogs. Located in the prosperous southeastern section of Wisconsin. No real estate. Rapidly growing into a two-man practice. Price $2,500. Address "Box E 29," c/o JOURNAL of the AVMA.

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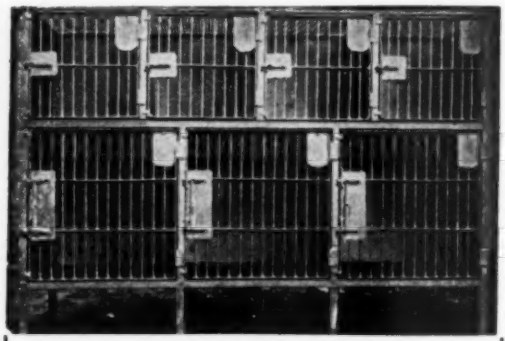
KENNEL BLANKS KIT—send $1 for sample kit of various kennel and breeding blanks, forms, con-

(*Continued on p. 52*)



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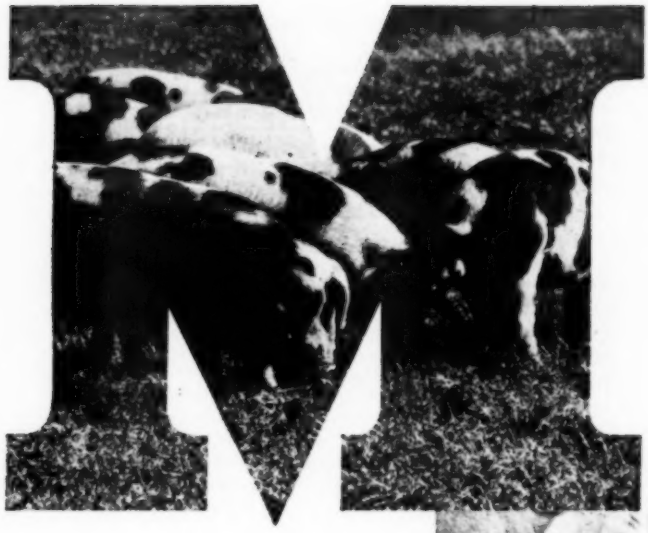
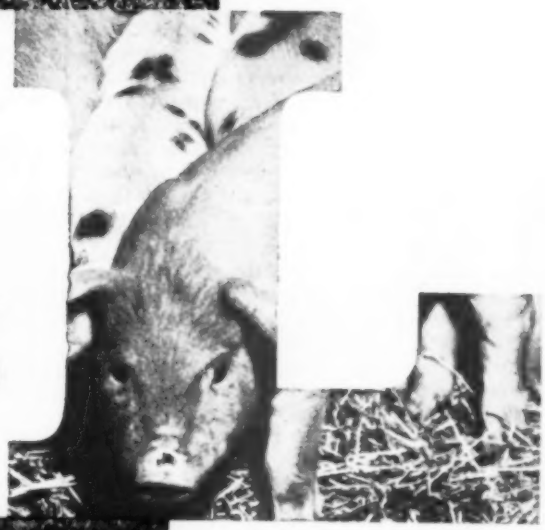


Vaccinate with confidence!



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Modified Live Virus
Hog Cholera Vaccine

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Exclusive Publication.—Articles submitted for publication are accepted with the understanding that they are not submitted to other journals, which is ethical publication procedure.

Manuscripts.—Manuscripts, including **footnotes, references,** and **tables,** must be typewritten, **double-spaced,** on 8½- by 11-in. bond paper, and the **original,** not the carbon copy, submitted. One-inch margins should be allowed on the sides, with 2 in. at top and bottom. Articles should be concise and to the point. Short, simple sentences are clearer and more forceful than long, complex ones.

Illustrations.—Photographs should be furnished in glossy prints, and of a size that will fit into the JOURNAL of the American Veterinary Medical Association with a minimum of reduction. Photomicrographs which can not be reduced should be marked for cropping to 1-column or 2-column width. Identifying marks within the photomicrographs, such as arrows, letters, or numbers, should be clearly marked with black India ink or white opaque ink to insure good reproduction and must be large enough to stand reduction, if necessary. Drawings, graphs, and charts should be made clearly and accurately in India ink on white paper and a glossy print of them submitted when possible. Numbers or letters appearing on graphs or charts should be large enough to allow for any reduction necessary for the chart or graph to fit JOURNAL pages. Blue lines in graph paper drop out in reproduction; therefore, if lines are required they must be drawn in black ink. All illustrations should bear the name of the author and the illustration number on the back.

Tables.—Tables should be simple and typed **double space.** Complex tables are not conducive to perusal. It is wiser to summarize complex material than to tabulate it.

References.—References should be typed **double space** and should be prepared in the following style: name of author, title of article, name of periodical with volume, year, and page numbers. References to journals not commonly known should give the complete name of the periodical, and where published so that they may be added to our reference files. When books are cited, the name of publisher, location, edition, and year should be given.

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600 S. Michigan Avenue
Chicago 5, Illinois

(CLASSIFIED ADS—*continued from p. 50*)

tracts, etc. Helpful, valuable, useful information. *Dog World* magazine, $3 yr., $5 two year. Judy Publishing Co., 3323 Michigan Blvd., Chicago 16, Ill.

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(Standard 10 cc Dose Anti-Hog Cholera Serum)

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Hog Cholera Vaccine

Modified Live Virus
Vacuum Dried
Porcine Origin

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- Does Not Spread Hog Cholera
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- Standard Dosage (2 cc. of D.L.V.—10 cc. of Serum)
- Protects Pigs Before Weaning
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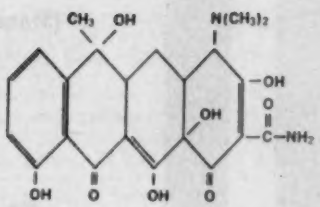

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Pfizer

The basic tetracycline structure (on which oxytetracycline and chlortetracycline are built) offers basic characteristics unsurpassed by any other broad-spectrum antibiotic: rapid absorption into the blood and other body fluids; excellent compatibility with body tissues; activity against a very wide range of pathogens; excretion in therapeutic concentration through the kidneys and liver; a welcome freedom from undesirable side effects.

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250 mg., 500 mg., 1 Gm., and 2.5 Gm. with Water for Injection, U.S.P.
Daily Dosage:
large animals—
1 to 2 mg. per lb.
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5 mg. per lb.

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100 mg., in bottles of 100;
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Daily Dosage:
large animals—
5 to 10 mg. per lb.
small animals—
25 to 50 mg. per lb.

Tetracycline-Vet Intramuscular

100 mg., 2.5 Gm., and 5.0 Gm.
Daily Dosage:
large animals—
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that your livestock may live...grow...produce

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He spends many hours reading veterinary journals...poring over latest research reports and clinical data.

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For prompt, accurate diagnosis, always consult your veterinarian.

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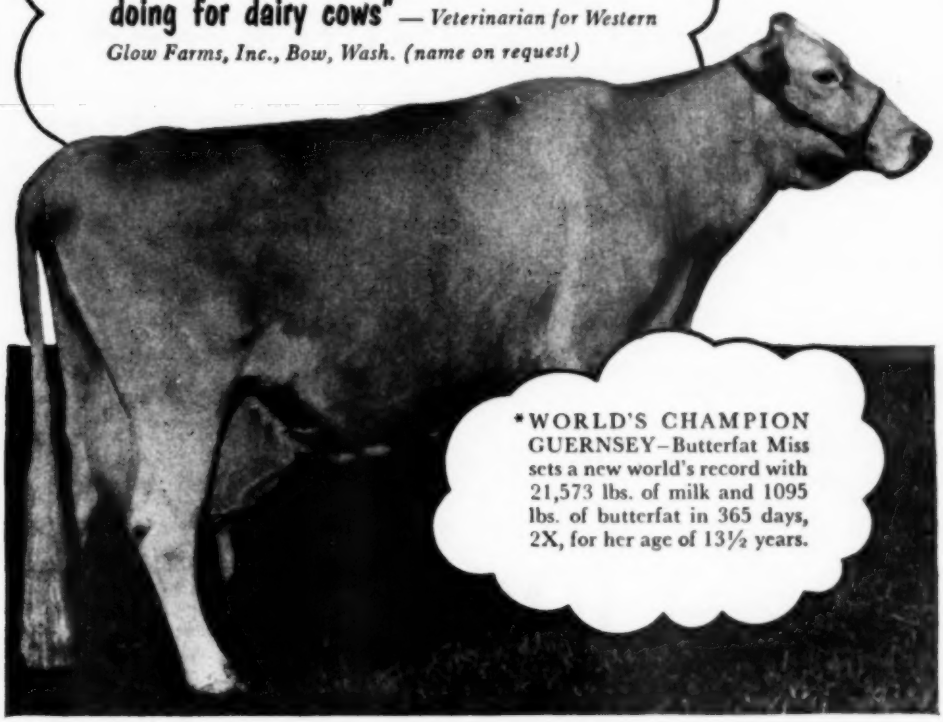
"The records of old Butterfat Miss* tell what kind of a job Via-D-Mineral is doing for dairy cows" — *Veterinarian for Western Glow Farms, Inc., Bow, Wash. (name on request)*



*WORLD'S CHAMPION GUERNSEY—Butterfat Miss sets a new world's record with 21,573 lbs. of milk and 1095 lbs. of butterfat in 365 days, 2X, for her age of 13½ years.

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VIA-D-MINERAL, containing 64,000 USP units of vitamin D_2 per pound, is generally fed to dairy cattle, but is also valuable to all 4-footed animals.

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In small- and large-animal practice, this effective local anesthetic fills a long-felt need. Xylocaine is unusually rapid in action, provides anesthesia of longer duration than equal concentrations of procaine hydrochloride. Potent, highly stable and its anesthetic effect well within clinical ranges of tolerance. For injection or topical use. Fort Dodge Laboratories, Inc., Fort Dodge, Iowa.

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an organic iodine supplement for poultry and livestock

Iodal Powder which contains betaine hydroiodide is richer in available iodine than comparable products. It is indicated as a conditioner and feed supplement in iodine deficient areas and is recommended in the treatment of conditions suspected of being due to insufficient iodine intake, such as *chronic bronchitis, hyperplastic fibrous tissue, still-birth, hairlessness* or *goiter, actinomycosis, infertility,* etc.

Iodal Powder is stable, neutral, and almost odorless. It may be mixed in feed or drinking water or administered individually as a drench.

Supplied in: 1 lb. or Ctn. 12-1 lb. (disp. labels).

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"SHIPPING FEVER" Antisera

Anti-Hemorrhagic Septicemia Serum
(Lockhart)

Anti-Corynebacterium Pasteurella Serum
(Lockhart)

Now Reduced in Price

so that either serum can be used prophylactically or therapeutically in adequate dosage under the present cattle market structure.

The show and shipping season is now at hand. Eliminate trouble by pre-exposure use of specific biologics.

Price schedule:	Anti-Hemorrhagic Septicemia Serum	Anti-Corynebacterium Pasteurella Serum
250 cc	$ 3.00	$ 3.25
500 cc	6.00	6.50
*12-500 cc	65.00	67.50

*Special packing. Not returnable for credit or exchange.

"Producers of Better Biologicals for Graduate Veterinarians."

ASHE LOCKHART, INC. • 800 WOODSWETHER ROAD, KANSAS CITY 5, MO.

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Infected quarters selected for experimental therapy had previously been treated with various antibiotic-sulfonamide combinations *without response.* TRI-INSTILIN was instilled into each quarter—*and by the fourth day, no staphylococci or streptococci could be cultured!* Milk samples remained negative.

TRI-INSTILIN's efficiency lies in two important points of formulation: 1) an exclusive free-flowing oil base that carries medication upward, throughout the infected quarter; 2) the most effective synergistic antibiotic combination yet developed for mastitis.

Each 7.5 cc. tube of TRI-INSTILIN contains 500,000 units of procaine penicillin G, plus 50 mg. NEOMYCIN and 2500 units BACITRACIN! TRI-INSTILIN is a professional formula—packaged in a clean, modern, professional-looking carton.

TRI-INSTILIN is available in dispensing cartons of six 7.5 cc. tubes each, 100 cc. vials and sterile, single-dose, plastic syringes. Order from your Jen-Sal branch or distributor.

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